AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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THE MONARCH OF THE MOUNTAIN FLOCK.

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MERINO SHEEP IN THE UNITED STATES.

AMERICAN Merino sheep history is one of strange vicissitudes — of wild and unreasonable inflation and still more unreasonable depression. The first importation of which there is any authentic record was that of a fine Merino sheep sent as a present to a Mr. Foster, of Boston. So far from comprehending the value of the gift he had the animal slaughtered and ate the mutton. He pronounced it "delicious"; it certainly was costly, for he soon after paid a thousand dollars for another sheep of the same kind. The incidents attending the advent of the breed to these shores are typical of its career ever since. During the first decade of the present century thousands of fine Merinos were brought from Spain, and sold at prices ranging from three hundred to one thousand dollars each. Then came the non-intercourse acts, the embargo, and the war of 1812-14 between the United States and England which gave an enormous stimulus to the woolen industry. Fine wool was sold as high as three dollars per pound and the sheep brought corresponding prices. Five years after the end of the war those sheep or their immediate descendants were a drug in the market at a dollar each. With the American ports reopened to commerce, a flood of foreign textile fabrics was poured into the country, overwhelming the American manufactures of woolen goods. The woolen mills were closed, the operatives thrown out of employment were driven to farm work, increasing to a still greater extent the surplus of farm products for which there was no sale. Wool, except for the limited amounts used in household industries, was without a market, and sheep had only a nominal value. Flocks which had been the wealth and pride of their owners were slaughtered off. Nor have the bitter experiences of those two decades been wholly without parallel in later times. The last forty years have witnessed fluctuations in sheep husbandry, which if not as violent were as needless and as preventable as those.

Meantime the Merino sheep, beset by wild animals, worried by dogs, and tossed in the whirlwinds of political contest, has kept on adding millions of dollars to the national wealth, furnishing employment to thousands of busy hands supplying both food and clothing. The breed has not only survived all vicissitudes without depreciation, but has improved to such an extent that the American Merino of to-day is as far ahead of the original stock as a Rhode Island Greening or Northern Spy is ahead of a wild crab-apple. This is wholly due to the enterprise, intelligence, and "pluck" of American breeders and flockmasters. Holding on to their flocks through evil and good report—often at serious pecuniary loss—they have strictly maintained the purity of the breed, and advanced it in excellence, until the American Merino is beyond question the best fine-wooled sheep in the world. A perfect, typical sheep is level, broad-backed, with a well-developed, symmetrical body, standing on good strong legs, the whole covered with a true Merino fleece, a year's growth of which should weigh, unwashed, as high even as twenty-five pounds from a ewe and forty from a ram. A well-bred American Merino is a bold, upstanding animal, with a front something like that shown in our frontispiece. He has a stately grace, inherited from a long line of ancestors which would seem to have caught something of it from the high-born Spanish dames who held exclusive possession of the breed for so many centuries. The American Merino improves every other fine-wooled sheep with which it is crossed. In Australia they are eagerly sought because they add density to the open but otherwise admirable fleeces of the countless flocks which graze there.

Next to the coyote and timber wolf in the newer regions, and the tariff tinker everywhere, the worst enemy of sheep-husbandry is the dog. This is not wholly a modern evil, but was evidently active in the early colonial days. In 1648 the General Court of Massachusetts enacted that "If any dogge shall kill any sheepe, the owner shall either hange his dogge forthwith, or pay double damages for ye sheepe. If ye dogge hath been seen to course or bite any sheepe before, not being sette on, and his owner had notice thereof, then he shall both hange his dogge and pay for ye sheepe." When every State shall enact—and enforce—measures as just and effective as that, and our national government maintain a broad, wise, and uniform public policy toward sheep-husbandry it will attain a position of permanent prosperity.

RATIONAL CORN CULTURE.

HENRY STEWART.

The necessity for frequent stirring of the soil in a cornfield is paramount for itself alone. If no weed ever appeared there would still be need for frequent cultivation. A few years ago I left ten rows through a cornfield unworked, while the rest of the field was cultivated every week until the tassels appeared. The weeds in those ten rows were pulled by hand, and there were very few, for the ground was a sod deeply plowed, and harrowed thoroughly up to the time the corn was planted. The stalks in the ten rows were more than three feet shorter than those in the rest of the field, and there was scarcely a single ear that was filled out to the end. The rest of the field, which was a few square yards over two acres, yielded one hundred and ninety-eight bushels of shelled corn, estimating two bushels of ears for one of grain. The corn was husked by the bushel and measured twice, so that no mistake was made in the measure. The ten rows made up exactly one-fifth of an acre (thirty-two rods), and gave only eleven and a half bushels of corn. Everything else being equal, the difference, being over forty bushels to the acre, was clearly due to the absence of cultivation, the ground being baked and dry the greater part of the time. Since then I left one strip on the side of a field, measuring exactly an acre, without either cultivation or weeding, and it yielded fourteen bushels of poor corn, the rest of the field yielding forty-two bushels of grain to the acre. In 1889 I had an eight-acre field that yielded enough to completely fill a five-hundred-bushel crib, equal to over thirty bushels of shelled corn per acre, on a very poor old field that was newly broken up, and without manure, but was cultivated eight times, while my half of a rented four-acre field, worked only twice, amounted to one wagon load of ears, equal to twenty bushels of grain, and this small field was much better soil than the old field.

My practice for many years has been to work the corn once a week, beginning on Monday when the weather was suitable, and continue the working as long as a horse can get through the rows without breaking the stalks—and this is usually until the ears begin to hang out in the rows—and the cultivation has always been on the surface. Some years ago a heavy rain washed a slope on one of my fields very badly, and exposed a fine network of roots for several square rods, which completely filled the soil. Several of the plants were washed loose, and could be taken up with the roots. The roots of many plants were eight feet long, spreading over nearly three rows each way, and they lay very near the surface. In places roots were abundant at a depth of two inches, and very few were as deep down as the land had been plowed. More recent examinations, made purposely, have convinced me that this is the habit of the corn plant to send out its roots near the surface. It may be that surface manuring with fertilizers tends to such a habit of root growth, but soluble fertilizers quickly diffuse themselves through the soil, and it may be that the desire for the sun's heat, which corn so much needs, brings these roots to the surface.

It is clear that a plant having such a superficial root growth should not be plowed, but requires only surface cultivation; for the breaking of the roots must necessarily check the growth of the plants. I had once a plain demonstration of this fact. A field of Evergreen sweet corn was partly plowed, contrary to my instructions, by a willful hired man, who laughed at my shallow cultivation of the rest of the field. He plowed it deeply and ridged up the rows until I discovered and stopped him. The weather was hot. The corn wilted at once and never grew afterward. Not one ear was gathered from the plowed rows, while the rest of the field averaged over eleven thousand ears per acre, counted for the market. To break the feeding roots of a plant is clearly to stop its feeding, and to turn all the power of growth to repair the damage and make new roots; at a time, too, when all the strength of the plants is required to form the blossom or the grain. Something has been said of the usefulness of root-pruning corn. It is equivalent to drawing a cow's teeth when she is busy turning good grass into milk and butter, and equally prevents the gathering of nutriment. It is practiced for this special purpose in fruit culture, for checking the growth of trees to reduce the amount of new wood, and it has the same effect upon the corn which we want to hasten to maturity as soon as possible, and to aid in every way in enabling it to gather food and increase its product.

For this reason the cultivation of corn should be early and often, and as late as may be possible, and always on the surface, merely keeping the soil loose and mellow, and absorbent of moisture and the heat of the sun. It helps, too, very much to apply fifty pounds per acre of some active soluble fertilizer immediately after the

working of the soil at intervals through the summer, especially when the blossoms, the tassel, and the silk are about to appear, and when the grain is about to form after the impregnation of the silk. These are periods in the life of a plant when extra feeding will greatly assist in the performance of these reproductive functions upon which full ears, and sound grain, and early maturity depend.

CULTIVATION OF BARLEY—V.

JOSEPH HARRIS.

In harvesting wheat and oats all we have to do is to get them dry. If they do not start to grow rain does not hurt them; but this is not the case with barley. If the crop is "stained," the buyers cut down the price five, ten or fifteen cents a bushel. And unfortunately barley is easily stained or discolored. In old times, when barley was cut with a scythe or cradle, we cured it as we do hay, by turning it in the swath, and as soon as dry it was made into cocks. If rain fell while it was in the swath, it had to be turned again as soon as the rain was over. In "catching weather" barley caused more anxiety than any other crop we harvested, and many a farmer has vowed he would never bother with the stuff again. Even when once safe in cock the danger is not over—a heavy rain will soak into an ordinary cock and discolor the barley. The discoloration comes principally from the straw. The wet or damp straw and green weeds stain the grain.

When reapers were introduced careful barley-growers bound their barley into sheaves as we do wheat. It was a great improvement, but required more help than most of us could command. But now that we have reapers and binders, a good crop of barley can be harvested with far less danger of injury than formerly. I say a "good crop" because a poor crop of barley cannot be cut with a reaper and binder. Last year, owing to late sowing, followed by a severe drought, many crops of barley were so thin on the ground and so short in the straw that the only way they could be harvested was to cut them with a mowing machine and rake them up with a steel rake. In other words, they were cut and handled like a crop of grass. As a light crop is generally a weedy crop, and as barley and weeds are raked up together and placed in a cock, it takes very little rain to stain the barley, and the result is discouraging in every way—the yield is small and the price low. But with a good, clean crop there is no special difficulty in harvesting barley, with ordinary weather, without discoloring the grain. The reaper and binder give us control of the crop. We can cut fifteen acres a day and need not, as formerly, commence cutting before the crop is ready and we have promise of settled weather. Formerly with a large crop to harvest we had to commence before the crop was hardly ripe enough, for fear that we might not get through before some of it would be too ripe and it commenced to "crinkle down." Now we can wait until all trace of sap has disappeared from the kernel and the straw shows signs of drying up. Then, as soon as the dew is off, start the machine. Do not make the bundles too large or tie them too tight. We want them to dry out under the band. The sheaves should be stuck up in shocks as fast as the reaper throws them off. At any rate, keep so close to the machine that there will be no risk of being caught with sheaves on the ground by a sudden shower. Recollect that if the barley is discolored it will often make a difference of ten cents a bushel in the price, and this will pay well for a little promptness and forethought. It will pay also to take each sheaf in one's arms and straighten up the heads of grain. The ordinary way is for a man to take two bundles, one in each hand, and stand them up opposite to each other in the shock, leaving a space between them at the bottom on the ground of about a foot with the heads close together at the top. With barley there should be two men to a shock, one on each side, and they should straighten up the heads of grain and bring the straw just beneath the heads tight together so that the rain will be excluded and the greater portion of the heads will be outside. In case of rain, there will be little chance of the water that has been in contact with the straw wetting and discoloring the grain, and as soon as the rain is over, the heads being nearly all exposed to the sun and air, will dry out quickly. If any of the sheaves are blown over, or slant too much, they should be immediately straightened up, and in case of heavy and long continued rain it will be sometimes necessary as soon as the outside of the sheaves are dry and the inside of the shock is wet to remake the shock and put the dry part inside and the wet part outside.

If one is short of barn room and must put more or less grain in a stack, let it be wheat or oats rather than barley. When the barley is safe in the barn let it stay there until it is through sweating and is thoroughly dry. In fact, the better plan is not to thrash it until ready to sell. It will keep better in the straw than anywhere else, and will come out bright and fresh. If one *must* stack the barley the stack should be thatched, or covered with canvas. Some farmers put grain in a stack for a few days and then thrash it. This is a poor plan. Better thrash it direct from the shock. But in the case of barley, if this plan is adopted, arrangements must be provided for spreading out the barley not over six inches deep, and it will probably be necessary to turn it every other day for at least a week. If placed in a bin it will sweat, heat, and turn musty. If the machine does not clean the barley perfectly, or if there are thistle heads in it, the day after finishing thrashing run the barley through a good fanning mill and remove all the thistle heads, weeds, rubbish and light grain. The cleaner it can be made the less likely will it be to become musty, or damaged in any other way.

THE THEORY OF FUNGICIDAL ACTION.

DR. BYRON D. HALSTED, NEW JERSEY AGRI. EXP. STATION.

So much has been said within the last few years of the nature of parasitic fungi that for the present purpose it is only necessary to say that they are minute plants that grow upon or within the substance of the attacked leaf or stem, fruit or root. They consist of delicate threads seen only with the compound microscope, and produce minute bodies known as spores that, like seeds, are able to germinate and spread the fungus to new places. Any particular fungus serves its end when it produces a crop of spores in the same sense that a wheat plant is finished when the grains are matured.

The surrounding conditions under which a fungus is best able to thrive and spread its kind particularly interests the practical farmer. The medium, for example, through which the spores are disseminated are two, namely: the winds when the spores are dry, and by moving water when they are suspended in it. For germination they need moisture, and to be most effective the spores should be upon the healthy surface of a tender portion of the plant that the fungus is adapted to. Thus the corn smut needs to be upon a corn plant, and the grape mildew spore must be upon a vine, leaf, stem or other portion. It is safe to say that an alternation of the wet and dry condition is the most favorable for the production as well as the transportation and germination of the spores, and such spells in warm weather are always followed by an unusual abundance of fungous growths. In other words, a wet summer is one of blights, mildews, molds, etc. But knowing these favoring conditions does not in itself help much to counteract the troubles, for the conditions of heat and moisture are not under man's control. A knowledge, however, of the manner of the production of the spores and where they must go to propagate the disease, together with the time of year when this takes place, lies at the foundation of a successful application of fungicides. If something can be placed upon the affected parts that will destroy the spores then formed and not injure the infested plant a great point has been gained. In the second place, if the same substance will kill the spores, germinating or otherwise, that are lying upon healthy parts the second point is gained. Fungicidal action is twofold, namely, to destroy the spores as they are forming, and to kill those that are germinating. These ends are accomplished by the application of some compound, usually of copper, in small amounts. What substance to use, and the strength will depend upon the particular case. Thus, the treatment for the black rot of the grape is not the same as for the mildew of the rose or the anthracnose of the raspberry. Some compound of copper is the basis of nearly all the fungicide compounds now in use. The substance, whatever it may be, must be applied in strength sufficient to destroy the fungus, but not cause injury to the plant, and at the same time not be expensive.

The devices for the application of fungicides are numerous, and are becoming more perfect every season. The chief point is to force the substance in a fine spray upon the plant so that every portion will be coated with a thin film of the poison.

It follows from this that should a rain soon follow the spraying the operation needs to be repeated. And as the season of spore formation may cover several weeks or months, the number of sprayings should only be limited by the necessities of the case, the point being to keep all portions of the treated plants thinly coated with the fungicide. If the area is large a horse is needed to draw the sprayer. For small grounds a knapsack pump is very convenient. One of the main points in all spraying is to remember that it is not cure but prevention that is sought, and therefore the

work must be begun early—and before the plants are already mildewed, blighted, or otherwise attacked by the fungous enemies. As a last thought bear in mind that much depends upon a winter cleaning-up of the vineyard, raspberry field or other place where injurious fungi have prevailed, or else the spores will be ready to spring into life when warm days come.

UNEASY FARMERS.

GEO. A. STOCKWELL, RHODE ISLAND.

No wonder there are many uneasy farmers. The times are mending a little, but they have been hard, and methods and opportunities of advancement have changed. Those acquainted with the circumstances must sympathize and even applaud the farmer in his discontent, for discontent of the right kind, well founded, may be the stepping stone to something better. When the farm yields only a bare living and taxes, then the farmer is dissatisfied, and he has cause, for no man of spirit in this age of the world is contented with a living. In this fact is found one clue to the abandonment of a large number of farms in Maine and Vermont. But it must be admitted that it is a serious matter to quarrel with a "dead sure" living, scant as it may be. Discontent leads to restlessness, and to unwise forsaking of what is in hand. Every year in some, if not many, parts of the East, the "western fever" rages and claims its victims. Hasty migrations have been made to some supposed land of promise in the West, and the result in many cases was disastrous.

Standing upon the rolling prairie, the richest land on this continent, where the prairie rolled on to a high hill, the writer has had pointed out to him twelve abandoned farms, and he has also seen on this prairie land more poverty, discontent, discomfort than can be found in an agricultural area of the same extent in New England, or in any part of the East. It could not be worse anywhere. But the prairie was not to blame. It was the result of unwise emigration. Perhaps the settlers were deceived; at all events, they found the conditions different, foreign to their ideas and methods, and disappointed, broken, gave up. This fact cannot be disputed, namely, that a living on a New England farm, poor as it may be is much more than a mere living to the same man on the prairie, unless he has capital to help him; and a bare living on the prairie, obtained from the prairie, is the nearest to nothing that ever man had to contend with. The prairie buds and blossoms like a garden, but not without help. Therefore, let every farmer who can command a living, scant though it may be, cling to it, think twice a hundred times before he abandons it.

THE NORTHERN LIMIT OF PRODUCTION.

RICHARD WAUGH, MANITOBA.

It is now many years since Dr. John Torrey propounded in the "American Journal of Geology" the doctrine that cultivated plants reach their highest perfection at the northern limit of production. This doctrine is not universally applicable, even in the vegetable world, but it is approximately accurate, not only for plants but for domesticated animals as well, and especially is it so with the products of the temperate zone.

The vegetation of the Northwest, of which for the last few years the writer has had an extensive range of observation, furnishes many special instances in support of the theory, and it is strongly evidenced by all the facts. The very finest sample of wheat I have ever obtained from Dakota was from a recently settled upland on the 49th parallel, close to Manitoba. Ladoga, the early ripening variety of Russian wheat introduced by the Dominion government, has never, on equally as good land further south, attained the perfection that it did last year at Prince Albert on the Great Saskatchewan, a thousand miles northwest of St. Paul, Minn. Red or Scotch Fife wheat of the most perfect type, weighing sixty-six pounds to the bushel, plump and bright, from the northern margin of Manitoba, has never within my knowledge been excelled by anything produced further south. Cabbages weighing, when stripped clean, thirty-two pounds per head, and cauliflowers that without a leaf on them weighed sixteen pounds of delicate white curd have been repeatedly grown in the market gardens of Winnepeg, Manitoba; and other vegetable products, that space forbids me naming, do equally well under the stimulating effect of a far northern sun and suitable climatic and soil conditions.

There are fruits such as the Newtown pippin whose absolute best has only been achieved in the valley of the Hudson in spots where all other conditions combined to favor its perfection. Much the same thing may be said for the Fameuse apple, whose most congenial habitat is the island of Montreal. But either for that one variety or the majority of apples and various other table fruits it can hardly be denied that, other things being equal, the furthest north fruits have the choicest flavor. Even the wild herbage of the north is superior in flavor and feeding qualities to that grown in warmer latitudes. The contrast between a cow or colt that has been "rustling" all winter at Fort Assiniboine in Montana and the same beasts raised in sunny Florida would be a surprise to the most superficial observer.

Great Britain has produced more varieties of domestic animals and of a quality superior to anything produced elsewhere in countries much larger and more favored by Nature. But even in that island the superiority of the Northern product is demonstrated by experience. Aberdeenshire Shorthorns and Polled cattle carry the palm right along both at home and abroad. The Scotch Shorthorn bull, Cup-bearer, stood unbeaten in this year's Western shows until young Abbotsburn, a bull of even more pronounced Northern lineage than himself, beat him at the Illinois State fair last fall, and the Aberdeen-Angus bull, Guinea, recently imported from the north of Scotland to Turlington, Neb., shows how climate gives extra value to the Polled breed. Josephine, the thirty-two month old champion Shorthorn fat heifer, shown by Queen Victoria in England, and a large proportion of the prize cattle shown in both England and America owe much of their constitutional vigor and splendid feeding power to the climate of the north coast of Scotland, where they were bred. And only the other day it was reported that an enlightened English breeder was taking his Shire horse breeding stud North to try if the climate and soil of the North will help him to a more perfect example of that fine breed than the English lowlands can produce.

Other conditions being equal, I claim that superior vitality, begot of the stimulating Northern atmosphere, is a well established principle, not only for cultivated plants and domestic animals, but even for man himself.

PLANT COLOR AS A SOIL TEST.

Georges Ville, the French agricultural investigator, contends that there is a constant relationship existing between the color of the growing plant and the composition of the soil. That is to say, a plant in a soil containing phosphoric acid, potash, and nitrogen in sufficient quantities and in available form will show a certain green color. The same plant, if either one of these three elements is in insufficient quantity, or in a form not available to the plant in the soil, will show quite a different green. The kind of green indicates whether it is potash, or phosphoric acid, or nitrogen that is mainly wanting to the soil. He maintains, on the strength of experiments extending over a period of five years, that the absence of nitrogen manifests itself by a yellowish green, the absence of potash by a pale green, and the absence of phosphoric acid by a green much lighter in shade than the color of a healthy and well-nourished plant. If this holds true, then the farmer is in a position to know what composition of the three elements of plant food will be required for any particular crop and soil, and the agricultural scientist will be placed in a position to give with much more certainty sound and reliable advice as regards fertilizers.

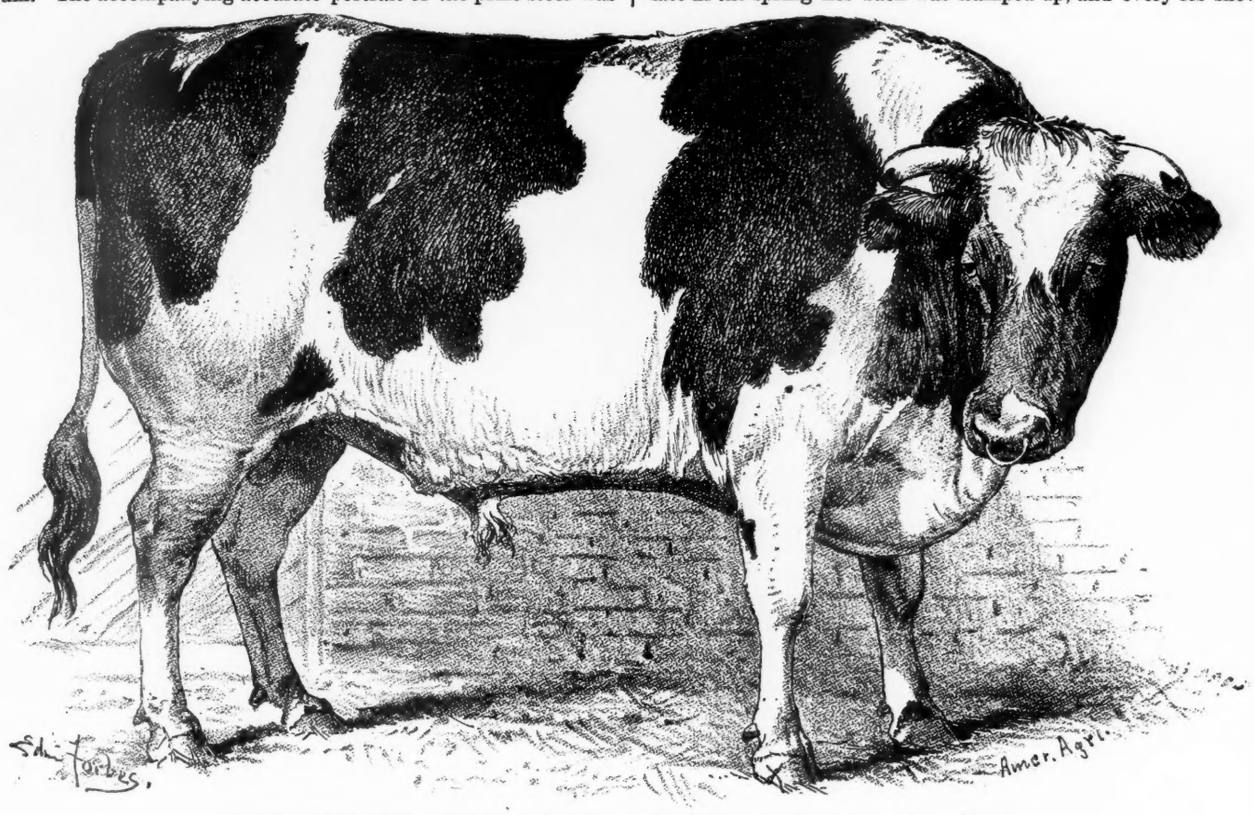
It is admittedly very difficult even with the aid of soil analyses to tell exactly what a soil requires for a particular crop. Now, if the plants by their color furnish, so to speak, a natural fertilizer barometer, a decided step forward would be made. Mr. Ville's conclusions will be viewed askance, as were his nitrogen experiments, but a set of very simple experiments would settle this important question. A few vegetation vessels filled with a soil of known composition and given respectively additional quantities of phosphoric acid, potash, and nitrogen would establish the variety of color recurring on one and the same plant by the absence of the one or the other element. An experienced eye would soon be able to tell from the color a field of wheat, corn, barley, and oats, presents to the eye what the soil needs principally. Every farmer knows that the same wheat on two different fields may look altogether different, and of course there is some good reason for it, which Mr. Ville's study of the relationship between plant color and soil composition may help to solve.

Gentle Cows.—The quietest cows are the most productive and profitable, and are reared from calves which have been hand-fed, and made perfectly docile by gentle training and handling up to the time when they come into profit. This gentle disposition and docility are inherited.

HOLSTEIN-FRIESIANS FOR BEEF.

Quite a strong feeling was manifested, some five or six years ago among breeders of Holstein-Friesian cattle, in favor of pushing them for a place among the established beef breeds of the country. Many of the Western breeders especially, desired to make large exhibits of well-fattened Holstein-Friesians at the great fat-stock shows, in direct competition with the stately Shorthorns, the massive Herefords, the well-ripened Aberdeen-Angus and other breeds reared and kept wholly or mainly for beef. But highly as they were valued for the dairy the Holsteins had not then the almost invincible records they have since achieved as producers of milk and butter. The most thoughtful and judicious breeders generally preferred to regard them strictly as dairy cattle rather than to make any efforts toward "booming" them for beef. Then a period of extreme depression in the markets for beeves which has ensued would naturally tend to create indifference in regard to the fattening qualities of any breed.

But at the Chicago fat-stock show last November, the pure-bred Holstein-Friesian steer, Ben Jonson, attracted general admiration by his smooth, well-fattened form, and was awarded a first premium. The accompanying accurate portrait of the prize steer was engraved from a photograph taken while he was on exhibition. Ben Johnson was owned and exhibited by Mr. M. L. Sweet, Grand Rapids, Michigan.



BEN JONSON, THE PRIZE HOLSTEIN-FRIESIAN STEER.

The beef qualities of these black-and-white Dutch cattle are well known in Europe, and large numbers are taken to the London market. They possess large frames, and the steers may be fattened to great weights. Still, there is no intention on the part of Holstein-Friesian breeders to let the beef-making possibilities of the breed interfere in any way with their dairy capacity. It is as great yielders of milk and butter that they will continue to be chiefly known in this country. yet it is not without significance that the surplus male calves and dry cows may readily and profitably be converted into beef.

Too Much Fencing.—Farmers complain bitterly of taxation imposed by the Nation, State, county, and town. But the self-imposed fence tax is far more burdensome to the farmer than all the other taxes, and to a large extent unnecessary. In the East, at least, there is too much needless expensive fencing. Extensive grazing is not so economical as in the West. Soiling saves fencing and keeps up the fertility of the soil by saving manure. When the sugar beet industry shall become commercially successful we shall have beet leaves and beet pulp to add to our other forage crops. Without that, however, it is easy to produce enough from a well-tilled, fertile acre to keep a cow a year without pasturing or fencing.

RECOMMENDING A COW.

JOHN G. HOLT, INDIANA.

One of my neighbors came over to buy a cow from me. "What kind of a cow have you for sale?" he asked. "A dark colored grade Jersey." "But I mean" said he "how much milk does she give, and how much butter will she produce in a year?" "These are questions you will have to decide for yourself."

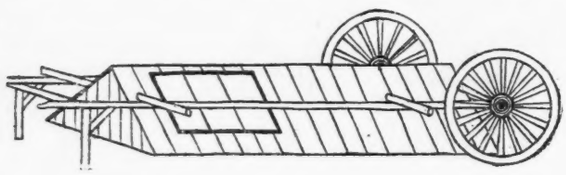
I once recommended a cow to some good friends and neighbors of mine because I knew she was a good one, such as I wanted them to have. They seemed to think forever after that I misrepresented the facts. For, after they bought her at a good price, she did not produce more than half as much butter as I said she would. She was taken from good full feed, careful shelter, and a warm stable, and turned out with the stock cattle to rough it around straw stacks and the fence corners of the stalk fields. When I saw her late in the spring her back was humped up, and every rib showed. The boys were trusted to feed her, and as she was not the boss of the yard she sometimes failed to get any feed at all. I was powerless to defend myself from the imputation of bad faith without wounding their feelings. For people are very touchy in regard to their way of doing things, and they would never say anything but that "the cow was not quite as good as they thought she was." I had the satisfaction of seeing her sold to another purchaser in about a year afterward, and he kept her for several years, and said she was the best cow he had ever owned. But this taught me to recommend the keeper and not the cow. I also learned that a cow, though ever so good a machine for converting feed into butter, could extract but a small quantity of it from cornstalks and straw alone; and people who depend on such feed rarely have good cows.

No! I do not recommend cows any more, and if you buy a cow of me, you must judge of her points yourself. I think there has been a wonderful amount of confidence lost in the human family by recommending stock to the wrong person. A cow is called a good one here that will make a pound of butter a day, and I have turned off five or six in that many years to the butcher in trying to get one that would produce a pound a day. The most of them have only done half so well. I think that half the cows in Indiana will

not produce over 150 pounds a year, and yet there are so many kept that in some parts of the State butter will not bring over fifteen cents per pound at any time in the year. When they read in the AMERICAN AGRICULTURIST of cows producing 800 or 900 pounds per year, they smile knowingly and think it only a big story. We have some good Jerseys here, too.

HOW TO MOVE LARGE CHICKEN COOPS.

Poultry raisers have long agreed that a frequent change of site for the poultry houses is beneficial for both birds and the land, but it has usually ended here. The coops are too heavy for one man to move, especially when soaked with rain, and the time of two or more men needed to move a coop is so valuable that the regular changing of coops turns out to be but a pretty theory. How to speedily and cheaply shift them is shown in the accompanying sketch. A pair of strong wheels and an axle have shafts attached that are long enough to reach the whole length of a coop and project for a brace rod and handles. The coops are built broad on the ground and sharp at the top, and are high enough to project one-third above the axle. When it is necessary to move one, these long arms are drawn over it and rest on the sides two-thirds of the way

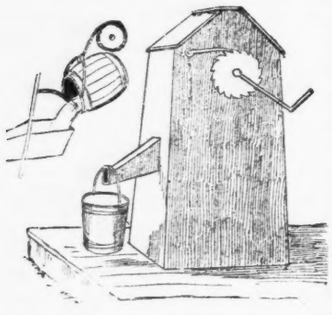


MOVABLE CHICKEN COOP.

from the ground. Wooden pins are then thrust through holes made for them in the peak and just above the arms at each end. One man can now raise the entire coop with fowls and transport it wherever desired, and at once with the same arrangement move a dozen similar coops without any difficulty or loss of time.

WELL-CURB AND TILTING BUCKET.

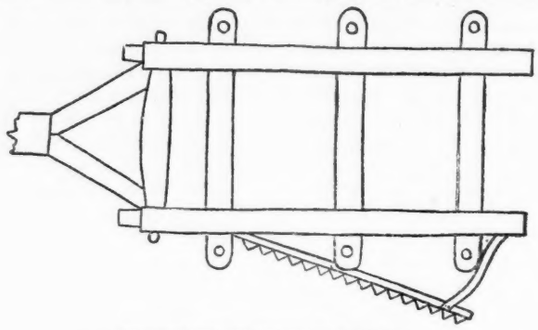
Our engraving shows a perspective view of a well-curb, which, with the accompanying devices, is convenient and durable, while it conduces to keep the water in a wholesome condition. The curb is made of upright boards in the form shown in the engraving. The front and back need be only twelve or fourteen inches in width. The sides are twenty-eight inches wide at the bottom, sloping to twenty-four inches, whence they are cut to a truncated triangle. The top of this is covered by a board firmly nailed, to which the sloping covers on either side are hinged. Near the top, and somewhat at one side, are holes with boxes to admit the iron journals of a solid wooden drum. On the crank end of the journal, and outside the curb, is a toothed wheel and iron ratchet, to prevent the full bucket from going down by the run, if the crank slips out of hand in drawing water. The ratchet is lifted when it is desired to lower the empty bucket. On the front of the curb is a wooden spout, rather large at the upper end, and projecting inside of the curb, as shown in the upper left-hand corner of the illustration. Directly above this, and also represented in the sketch, is an iron rod firmly attached to the inside of the curb, with the bent end projecting inward an inch farther than the open spout. This is the tilter which catches one side of the bucket as it comes up, and holds it until it is tilted by the continued action of the crank, and empties its contents into the open spout. The bucket has a two-inch hole in the bottom, covered by a leather valve. The latter is simply a piece of sole-leather, three inches wide and four long, tacked by one edge over the hole. A flat piece of iron or lead is fastened to the upper surface of the valve, to keep it in place. The bucket must be heavy enough to sink of its own weight. It is well to leave one of the hinged covers of the curb open most of the time, to admit air for the purification of the water.



A SERVICEABLE WATER-LIFTER.

A SERVICEABLE MEADOW SMOOTHER.

The man on the mowing machine dislikes to jolt over the bogs, and to run a mower on rough land soon spoils it. Aside from this, to leave a meadow full of bogs looks shiftless, and is poor farming. Bog grass is fit for nothing but bedding, while the clean meadow-

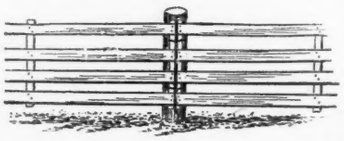


HOMEMADE MEADOW SMOOTHER.

fescue, bent grass, or red-top would make fragrant and nutritious hay. Those who have tried it know that it is next to impossible to dig or pull out the good-sized meadow bogs, and the old, slow, laborious way of cutting them off with a bog-hoe is an expensive process. Yet the remedy is a cheap one, and lies useless in many a barn. Take a worn-out section bar of a mowing machine holding the knives that play in the cutting bar, mortise it into the under side of the wooden sled shoe, or otherwise attach it to the sled-runner, so that it will slide on the ground at a slight angle, as seen in the sketch. Some fine day, when the meadow is cleared of hay, hitch on to the sled and see how neatly and speedily it will slice off the bog tops. It is a success and a conqueror. Put on a box, and let one man follow the planer-sled with a fork and pitch on every bog as fast as it is cut off. Dried they make a hot fire, and should be saved for fuel for the kitchen fire during warm weather.

SEMI-PORTABLE BOARD FENCE.

There are many places about a farm where a fence that can be readily removed, or where the posts can be redriven without injuring the boards, would be desirable. The fence shown herewith possesses these features. For calves or cattle three boards, five or six inches wide, placed one foot apart will make a good fence, while for sheep, hogs, and horses, four boards should be used, reducing the space between the two lower boards. The boards are nailed together in the form of panels which should be from sixteen to twenty feet in length,—the cleats to be four inches longer than the fence is wide so that they will not so readily split,—use steel nails, clinching them firmly. The panels are nailed together at the work shop, and hauled where wanted. Only one post to a panel is required, and that need not be larger than four inches in diameter, and may be either set or driven. The panels are secured to the posts by wire as shown in the sketch. Such a fence is readily taken down and placed under shelter when not in use, and will be found very convenient for fencing off a corner of a field for hog, calf, or other pasture. Use good lumber for the panels, and if the boards are liable to split use a gimlet to make a hole for the nails; it will take but a little longer.



MOVABLE FENCE.

Manure for Peach Trees.—First of all, the peach tree needs a rich soil. This may be produced by using barnyard manure liberally. Ground bone has been found an excellent fertilizer in many orchards, applied at the rate of twenty bushels per acre. Wood ashes have given good results. Manure for a peach orchard cannot have a good effect unless the soil is friable. Some experienced peach growers say that peach trees should never be set upon a soil that has been made suitable by underdraining. In other words, a peach soil should be naturally well drained. The peach cannot bear going with "wet feet." One of the most troublesome difficulties of the peach is the so-called "yellows." This yellowing of the foliage is often due to the lack of nourishment in the soil, or because the soil is too wet for the roots to take it up. There is another kind of yellows that is contagious, and may infest any orchard, and manure cannot cure it. Digging up the trees and burning them is the remedy.

THE CULTURE OF FLAX FOR FIBER.

S. HENRY.

Considerable attention has been drawn to the culture of flax for its fiber for manufacturing linen goods through the duty levied by the present law upon such goods for the express purpose of stimulating their production here. At the present time not one yard of fine linen goods is made in the United States, although fine linens are used by vast numbers of our people, and large quantities of them are imported every year. Flax is largely grown for seed and some coarse goods are made from the inferior fiber so produced. But fine fiber and seed cannot be grown together, for the reasons that when grown for seed the plants require much room to branch and make seed-stems, while for fine fiber straight, tall, branchless stems are required. Furthermore, in the ripening of the plant, the fine, soft, silky fiber, which is wholly cellulose, of the young stem becomes hard and woody and with a deposit of some mineral matter, which renders it harsh and brittle. This is shown by the following figures:

COMPOSITION OF RIPE FLAX STEMS, AND FIBER.

Potash	per cent	11.8.	Per cent	0.2.
Lime	"	8.3.	"	3.8.
Phosphoric acid	"	4.3.	"	0.7.
Silica	"	2.5.	"	0.3.
Magnesia	"	2.3.	"	0.3.
Total mineral matter	"	31.9.	"	6.0.

The prepared flax parts with nearly all the mineral matter above

FIG. 1. SHEAF OF FLAX.

mentioned, which, being soluble, is got rid of in the process of rotting, and it then contains 82½ per cent of cellulose, with 8½ per cent of fat, wax, and other extractive matters, and 8½ per cent of water, which give strength and softness to the fiber, with only 0.7 per cent of ash. The ripened flax contains only 59 per cent of cellulose which is coarse and brittle from the large quantity of insoluble mineral matter contained in it. Consequently, flax for fiber and flax for seed are quite different matters and the methods of culture differ altogether.

Growing flax for fiber is an important industry. This requires fresh clean soil; a clover or grass sod, well turned so as to bury all the vegetable matter, or a clean corn stubble or potato ground that

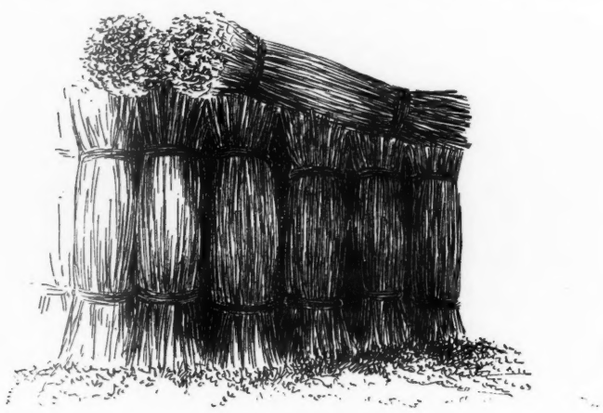


FIG. 2. STACK.

has been well manured will answer the purpose excellently. Loose ground is desirable; therefore, fall plowing is the best preparation for this crop. Thick sowing, so as to force a tall growth of single straight stems is necessary and two bushels of seed is the least quantity per acre, The seed is sown as early as possible, and as the crop grows, it needs to be kept clear of weeds if the soil is not clean. The plants should grow until the blossom is about to fade and before the seed is formed. The crop is then pulled by hand, when the ground is dry enough to part easily from the roots from which the soil is shaken. The hand-pulls are laid in small bunches all of even lengths as nearly as possible, and left to dry on the ground for one or two days, but the bundles should be laid so that the straw is not discolored or kept damp by the soil. After two days the bundles are gathered into small sheaves of ten to twenty pounds of even lengths of straw and are bound twice with bands of straw or twine as shown in Fig. 1. They must be even and firm.

The bundles are then set up in stacks, the longest in a line in

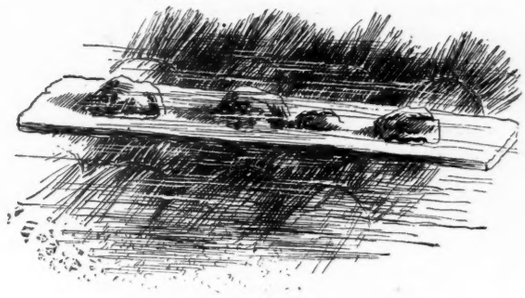


FIG. 3. WEIGHTED PLANK.

the front, and the shorter ones gradually behind them as shown in Fig. 2. These stacks made as long as may be convenient are supported by sufficient stakes, and protected from rain by a row of sheaves which are covered with common straw or anything else that will shed the rain. Large growers use water-proof sheets for this purpose which are tied down to the stakes. When the flax is quite dry it may be stacked and kept for months, or even years, without injury, but it is usual to proceed with the final disposal of the crop as follows:

The straw is rotted to separate its fibrous part, which exists in the bark, from the woody matter of the stems. The rotting is thus performed. A clean stream is selected, or a pond with a clean bottom, and the sheaves are laid down with the root ends lowest. A plank weighted with stones is laid on the last row to keep the whole mass a little below the water, as shown in Fig. 3. After a few days bubbles of gas will be observed to rise from the

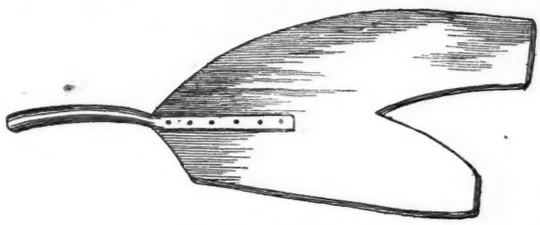


FIG. 4. PADDLE.

flax, which show that the desired decomposition is proceeding. When the outer bark slips off from the stems in a slimy substance, the operation is finished, and the bundles are taken out and spread on clean grass, or boards to dry. When quite dry the flax is ready for the first process of manufacture which consists of "breaking" the stems to loosen the fiber from the woody substance. This is done by beating it over a frame in precisely the same manner as broom corn is cleaned from the seed, only that the bundles of flax are beaten for their entire length until only the soft fibers are left; or, a person lays the bundle on the edge of a table with the end of the flax projecting, and strikes it with a broad-bladed paddle with a handle fitted at one end, made as shown in Fig. 4.

The broken refuse being thus removed, the fiber is then combed by drawing it through a number of sharp-pointed steel wires set in a frame, as seen in Fig. 5.

This cleans out the fine dust and straightens the fiber. It is necessary that the wires of the comb should be bright and polished. Two or three rows of teeth are often used in the comb.

All this necessitates much hand work which is the great obstacle to the growing of flax wherever farming is carried on under the

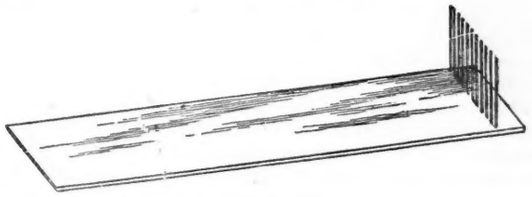


FIG. 5. HACKLE.

most civilized conditions. For this reason flax-growing is steadily decreasing, even in Ireland, where, in the northern part, it used to be a leading industry, and is mostly carried on in those countries,

as in Poland and Russia, where agriculture is in a low condition, and where women are hard-worked. But in this happier land, where mechanical ingenuity relieves from so much hard labor, machinery may be employed for all these processes, and the flax may be sold from the stock or stack to the manufacturers. The rotting can be done by steam, and the cleaning by very simple machines. Thus there is no reason why flax cannot be grown here excepting where the climate is too hot and dry. Flax loves damp, cool weather and thrives well under irrigation; but hot, dry weather is adverse to the growth of a fine, silky, strong fiber. Consequently, such localities must be selected for its culture as will secure the necessary conditions.

Northern New England, New York, and Pennsylvania,—but especially all the mountain region of the East, including those parts of Virginia, Tennessee, and North Carolina, or the Blue Ridge, where the rainfall is ample and the season propitious—are all well suited for this industry. The Southern mountain region, with its sixty-six inches average of rainfall, its mild climate, its favorable soil, and its thousands of waterfalls to cheaply drive the required machinery which might hum in all its valleys, giving painfully needed employment to the young men and women, and furnishing acceptable industry to the farmers, is most particularly favored by nature for this product; and manufacturers should be encouraged to establish themselves in the business in this as well as in other favored regions.

PROGRESS IN PEANUT CULTURE.

B. W. JONES, VIRGINIA.

So striking have been the advances in modes of cultivation and the appliances for planting and harvesting peanuts, that the old directions and plans are now, in many instances, no longer applicable. Much less work is now done by hand, than was formerly. Planting is performed by machines that make the rows, drop the peas, and cover them at one operation, one hand, with a single horse, planting, in nice order, five or six acres a day, which before was the work of two horses and five or six hands. Now the cultivation is done with the plow, or peanut cultivator, or sweep mainly, and much less hoe work is required. All this saves a great deal of labor and expense, and the cost of growing the crop is very much lessened. Much has been learned, too, as to soils and fertilizers best suited for growing bright, solid peanuts and large products per acre. Marl is not now the *sine qua non* it formerly was, though still much used, and oyster shell lime, land plaster, and special peanut fertilizers are more employed. It is found that peanuts precede corn in a rotation better than they follow it. Land covered with a smart growth of vegetable matter of the previous year, with shell lime applied in the drill under the peas is found to yield more and finer pods than clean land and fertilizer.

Perhaps the most striking change in peanut culture during the past decade has been the rapid and wide extension of area on which peanuts are now grown. Confined originally as a market crop to a small section of Southeast Virginia, one or two counties near Wilmington, N. C., and to a district of very limited extent in West Tennessee, its cultivation has widened greatly, embracing now practically one-half of tidewater Virginia, nearly the whole of Eastern North Carolina and ten or more counties of West Tennessee, and has also been extended to many other States until now it is grown more or less in nearly every Southern State, in Missouri, in the Indian Territory, and even in Arizona and California. More than a dozen States now produce the savory and profitable peanut where but two or three grew it ten years ago. It is quietly, but rapidly, becoming a national product and, like tobacco, cannot boast any longer of being the peculiarly Southern crop it once was.

But for the fact that this product has been captured by trusts and syndicates, and the profits that ought to be the farmer's are turned violently into the coffers of the middlemen, the culture of peanuts would be one of the most profitable of rural employments. Were there nothing to hinder the natural law of supply and demand, the grower would get paid for his work, even though the cultivation should increase tenfold still. The demand for it, and uses to which it is applied, are constantly increasing, and of course as long as these continue to multiply the price will not fall materially. It is not easy to surmise what the next ten years will bring to the peanut grower. Other countries, Argentina, Africa, Spain, Italy, etc., are beginning to grow the crop for export. This means competition for the American grower. It is a crop, however, that will remain and extend. Cheaper modes of growing and harvesting it will enable the farmer to hold out, though prices never improve. To this feature farmers must turn their attention, and, by growing more per acre at less expense, reduce the cost, and realize a profit.

THE FARM DOG.

GEO. A. STOCKWELL, RHODE ISLAND.

If some writers for agricultural and other papers may be believed, they would banish by law every dog on the face of the earth. We do not judge the race of men by the few, comparatively, that are in jail, or by the less number that have been hanged, and we should not judge the race of dogs by the few that run mad or steal mutton. The dog—the good dog—has a prominent place in our social and domestic economy. He is ornamental and useful; his friends believe in him as a cheerful companion and a trusty servant, and they make him as much as he can be a member of the family circle.

The small farmers of the land are more numerous than the large ones, and a large number of these small farmers work alone throughout the year, except, perhaps, in the busy seasons when they hire help. The dog is the only companion in the fields, and the farmer prizes his cheerful companionship, talks to him, and indeed is not alone. Life would be more lonely and monotonous without the dog that responds affectionately to every word and look of his master. Even the dog's bark, so offensive to some persons, becomes, under some circumstances, a cheerful, almost musical sound. Again, throughout the country, there is many a boy and many a girl in lonely places where there are no playmates. They must amuse themselves as they can. If there be a dog on the place, then life to the boy or girl is happier, more contented, for there is a companion to play with, and, in a childish way, to confide in, to command and to care for. And in such cases, if not in all, the dog is an educator. The man or boy who has the companionship of a dog, who appreciates a dog, learns lessons of humanity, and is never careless of the welfare of dumb creatures.

A middle-aged man in a city is followed daily by a shabby little dog. When asked why he kept a dog—such a dog, he replied, "When I was a boy I lived in the country, in a lonely place, and had no companion except a dog. That was thirty years ago, but I've had a dog ever since. A dog is company now, even in the city." Another man, a rich man in the city, says, "I would not live without a dog. I do not care what kind of a dog he is provided his bark is good. My dog, or his bark, has saved me already from robbery." But on the farm, the dog may be more useful than he is in the city. His watchfulness makes him invaluable. If his watchfulness consist of wakefulness and a bark, it answers the same purpose. Thieves shun the place where a dog is kept. One night, two men applied at a farmhouse for lodging. Their appearance was against them—they were tramps of the worst class. Refused, they asked permission to sleep in the barn. Refused again, they became insolent and said that they would stay in the barn whether the farmer was willing or not. The farmer's wife, who had listened to the conversation at an upper window, exclaimed, "There are two dogs in the barn." That was enough. The tramps had no further desire to go near the barn. The two dogs were two pups about three weeks old.

Extending the Lima Bean Season.—In some favorable localities on the north shore of Long Island the farmers aim to have lima beans to ship to the New York market in late October, or the early part of November. To accomplish this end a location facing and exposed to Long Island Sound is chosen, so as to get the wind from the Sound at night in October, thus warding off frosts which come to farmers in the interior and on the west end of the Island. The beans are planted about July 1, using poles for a part of the crop, and planting the remainder without poles. The vines are allowed to run on the ground, and produce a fair crop if the fall is not too wet; but if the season is very wet the beans will mildew. One very successful farmer planted two grains of sweet corn in each hill instead of poles. The limas ran on the cornstalks, and produced a good crop. In addition to the beans he marketed a fair crop of sweet corn, at a time when it was about out of market, and realized a handsome profit from it. Large fires are often built to the windward of the field of beans if there is danger of frost. It is surprising how little fire is needed to prevent a frost. The danger usually occurs toward morning. The marketing is done in the same manner as early crops. The crop always pays a fair profit, while sometimes it is very remunerative, the price being as high as five dollars per bag of one and a half bushels of pods.

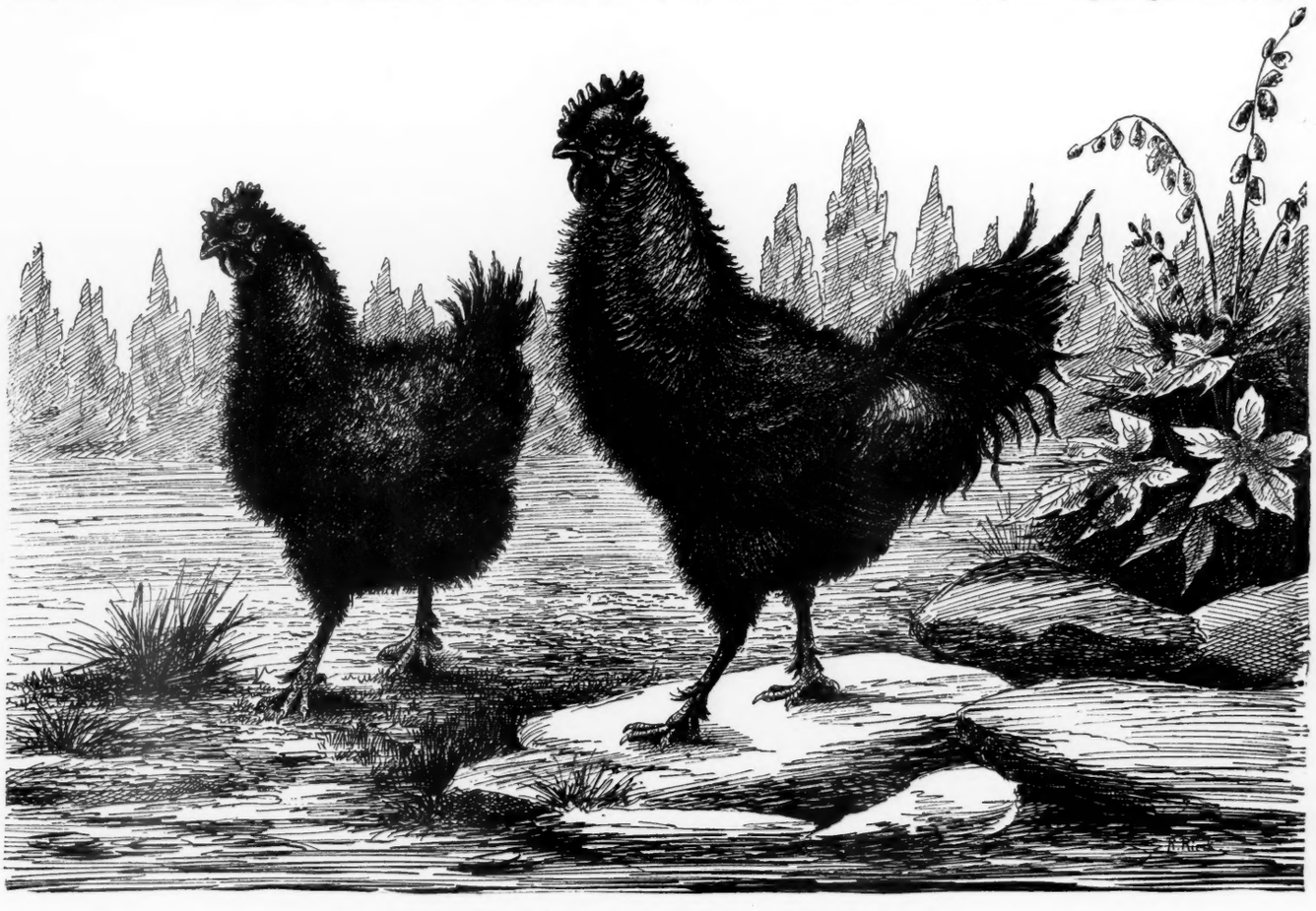
FRIZZLED FOWLS.

The Frizzled fowl is a little known but ancient breed of poultry, and like a "singed cat" is better than it looks. Its recurved feathers make it look as if it had been caught in one of our Western cyclones and had not had time as yet to rearrange its disordered plumage, or as if had been pulled feet foremost through a dense hedge. It is kept,—when it is kept,—chiefly as a curiosity, but it is, after all, a good, practical fowl.

The following from the pen of a recent Dublin contributor to the *Fanciers Gazette*, of London, England, gives a very good summary of the characteristics and qualities of the fowl. "This remarkably handsome"—from which it appears the writer can see even in Frizzled fowls great beauty—"and pure breed of poultry from Friesland has been most unaccountably passed over and neglected till it has become almost extinct. Dutch Frizzlies are unsurpassed as winter layers; their eggs are brown, of medium size, and delicious flavor; their daintily curled feathers are useful for trimming and other ornamental work, and also for their elasticity when used as stuffing material. They are extremely handsome birds"—which leads us to quote "There is no disputing about tastes," "their color varying from white, spangled buff, brown, and black; the white and black are very beautiful, the color being intensified by the curled plumage. A black Frizzly is as much blacker than a Minorca as a piece of black velvet contrasted with black silk. When on the roost, hatching, in charge of their families, or about to fight, they raise their neck feathers over their heads in the form of a ruff. They moult in summer, and require careful treatment at that period, as they throw off their feathers at once and are some time before they recover, in both senses of the word. At every other time they are wonderfully healthy. They are long-lived, are lively and spirited in constitution, much resembling the old style Game; they are about the same size as Dorkings; their flesh is extremely tender and very white. They never hatch until they are two or three years old, but at that age are wonderfuly good sitters and mothers; they are far hardier than Minorcas and other heavy, large-boned fowls, but do not mature so soon; they are quite as long-lived as turkeys, laying well up to a very great age. A Frizzled cock crossed with Dorking or Hamburg hens generally produces very large birds, which lay immense eggs; the cross does not have curled plumage, unless it be reversed and a Dorking cock crossed with a Frizzly hen. Frizzly eggs sometimes produce Silkies, white, black, and spangled."

The writer states one very curious fact, viz.: that a cross of a male Frizzled fowl with a Dorking hen gives a smooth-plumaged progeny while the reverse cross produces chicks with recurved feathers. Many poultry breeders believe that the male exercises the greater influence on plumage, but in this instance, if the writer has observed correctly, the rule is reversed. Silkies are a distinct breed, characterized not only by their webless plumage but by their dark skin, small size, and peculiar comb. What the writer whom we have quoted probably intended to convey was, that Frizzled fowls sometimes produced chickens with silky plumage. This is not a remarkable occurrence for we have had downy fowls in this country bred from Langshans, Cochins, and Plymouth Rocks.

There used to appear at certain of our exhibitions some pure white Frizzled fowls, usually entered as French Frizzles. They were rather small, but had nicely curled plumage. The best, so far as we have observed, which have appeared at American exhibitions was shown the past season at Charleston, S. C., and New York city. Those at the latter place are represented in our engraving. They were noticeably large, well-made fowls, with very good plumage and with colors not often seen on this breed, though it has never been bred strictly for color. The main points to be secured in exhibition specimens of this breed are size and well-curled plumage. Color, character of comb, and similar points, are of secondary importance to the professional breeder.



PAIR OF TYPICAL FRIZZLED FOWLS.

Oats as a Hay Crop.—Whenever the oat crop does not promise well to be harvested in the usual way, by reaping and binding, the best economy will be to cut earlier, the same as grass, rake up in light windrows, and as soon as dry, stow away in the mow to be reached about the first of February for the milch cows. The value will be seen in the milk-pail. The cows eat them up clean, and, if there is enough to last through March, the cows will come out to grass with coats as five as silk. There is no better fodder than oat-hay for calves and yearlings. It brings them out in the spring in fine form and fettle. Full feed pays in growth and product.

SUCCESSFUL MANAGEMENT OF YOUNG CHICKS.

MISS H. C. DUDLEY, KENTUCKY.

To insure the rapid and healthful growth of our spring chicks, we must study to make them comfortable in every respect, feed them liberally on foods easily digested, and endeavor by a judicious system of management to ward off disease. If the mother hen sits in an isolated nest, secure from molestation, do not disturb her until the chicks are twenty-four hours old, then gently remove her and her brood, and place them in a roomy coop that is well ventilated but close enough to protect them from rain and chilling winds, and accommodated with a smooth board floor made separate and raised one or two inches from the ground. This floor will protect the chicks from cold and dampness, a prevalent cause of roup and other diseases, and by having the floor loose the coop may be easily lifted off and both it and the floor thoroughly cleansed and purified by fresh air and sunshine.

During the first week of its existence the chick thrives best upon something similar to the contents of the egg from which it was hatched. Egg alone would be too concentrated, besides being rather expensive, so I take the scraps of egg-bread left from our breakfast and break them into a pan of sweet milk which is placed on the stove until it simmers gently and becomes thick. This seems to suit their needs exactly, and enables the chicks to grow strong and healthy from the first. After one week other table scraps, bits of meat chopped fine, cold vegetables, dripping, etc., may be also used. Nothing, however, that has begun to ferment or sour should ever be given, or uncooked food of any kind if we wish to keep our chicks free from indigestion and bowel complaints. Sound wheat boiled to bursting, and boiled cracked corn are both excellent foods, but even these should not be entirely substituted for table scraps, as the latter furnish a most desirable variety. All food should be fed quite stiff, as watery mixtures are too laxative. When the chicks are a month old one-third of their daily rations may consist of small dry grain and cracked corn, but even then they should never be allowed to pack their crops with raw grain, which is liable to swell, ferment and cause no end of troublesome maladies. If possible, give them sweet milk to drink, and, should any bowel derangement occur, boil the milk. Small chicks, however, should not be allowed free access to liquid of any kind, a drink twice a day is sufficient, and to prevent their getting themselves wet and chilled pour the milk into shallow pans containing a few small stones.

I am confident that a fruitful cause of mortality among very young chicks lies in permitting them to take too much exercise. We do not realize how weak and tender they are, and the mother hen, anxious for a variety of food after her long period of incubation, goes just so long as her little ones can follow her. The best plan is not to let them out of the coop at all until the chicks are three or four days old, and for the next few days only for a run of several hours daily, after which I let them out in the morning as soon as the dew has dried, and recoop them again for an hour or two at midday. This is not so much trouble as one would suppose, for the wise old hens soon learn to return to their coop at noon, and wait there, hovering their little ones until the attendant brings them their dinner. At four o'clock in the afternoon they are all housed for the night, and then given their last meal, a hearty supper. Always send chicks to bed with full crops if you want to see them grow fast and strong.

After ten days the brood may run out all day in fair weather, after the dew has disappeared. Before this, they require food four or five times a day, receiving only so much each time as will be readily eaten, but when ten days old three meals are sufficient, and for greater convenience their food is placed in a feeding coop, having interstices only large enough to admit the small chicks. Here the little fellows come trooping at regular hours, the mother hen following, ruffling up her feathers and clucking, thankful to pick up a few crumbs dropped by her chicks.

When each hen is taken off with her brood it is a good plan to rub her with a bit of lard about the head and neck, under her wings and on her breast. This will prevent the parasites from troubling her chicks, but do not touch the latter before they are ten days or two weeks old, when, a warm, bright spell of weather being selected, a tiny bit of pure lard should be rubbed on their heads and under their wings. Strict attention should be paid to keeping their feeding pans and drinking vessels clean and neat, and all their surroundings fresh and wholesome; and though early in the season there should be good dry floors to their coops, yet later on when the ground gets dry and warm it is best to place the coops on the short dry grass or upon bare ground that is sufficiently elevated to prevent the accumulation of rain water, taking care to remove them to a clean spot every few days and there need be little fear of disease.

Last spring I had a long shed built solely for the chicks' accommodation, with the open side facing south and west, so as to admit sunshine. Here the coops were placed, ranged against the wall inside, facing the front, and in them the hens were confined all day long in very cold or rainy weather, while the chicks played about in their dry covered run, creeping back to their mother now and then to warm themselves among her soft feathers. Here, too, their feeding coops were placed, so the little fellows were happy and contented all day, no matter how the rain poured down outside. And though the early spring was very inclement, yet my little chicks grew and throve like magic, only a few of them being affected with gapes, and not one fatally. For very young chicks broken egg shells furnish suitable grinding material, but as they grow older, sand and gravel should be supplied. As the chicks are able to bear it, compel them to take a more extensive range, as they are thus able to procure that variety of insect and green food without which they are unable to make the healthful and rapid growth so desirable for early broilers, or precocious layers. I have had nice large broilers of only six weeks of age, and some of my pullets have laid when they were four and a half months old.

WHY THE HENS DO NOT LAY.

WEBB DONNELL, MAINE.

There are a great many reasons why a particular flock of hens may not lay, but I think I could have told the owner of a flock that I saw recently the special causes why his fowls were refusing to fill the egg basket. And the reason was not an uncommon one. Some thirty hens were confined in a room about eight by ten feet. To be exact there were thirty-one hens and a cockerel in this small space, giving each one two and a half feet of floor space—less than half the space that should have been given. Fifteen hens would have laid double the number of eggs in such quarters that the thirty-one were giving, and would have cost less than half as much to feed. It is rarely that sufficient room is afforded to a flock of fowls. If it contains twenty specimens, these are placed in the henhouse. If in the fall the flock has increased to thirty-five, these are crowded into the same quarters—too small, perhaps, for the original twenty—then follows disappointment because so few eggs are obtained.

If any one will study the habits of fowls he will find that the smaller the flock the larger will be the proportionate individual yield of eggs. A hen, though domesticated, delights in surroundings that suggest her originally wild state. She does not like to be jostled by her neighbors, but delights to steal away by herself to lay her eggs in some dark corner out of sight. It pays to respect her preferences. Provide more room, or keep fewer numbers. Six or seven square feet of floor space is little enough for each fowl, and the nests ought to be constructed so the light will not fall into them. The best results are obtained where a part of the main room is partitioned off for a laying room. It can also be used for a roosting room where the fowls will be very warm on cold winter nights, as there should be no large windows in this apartment.

Another cause for the poor results with the flock first mentioned was the filthy condition of the floors. It is strange that people who believe firmly in cleanliness for the human family should allow the animals on the farm to inhabit such filthy quarters as many of them are obliged to. Setting aside the principle of the thing, it ought to be remembered that poultry will not do well unless they have dry, clean quarters. Fowls with colds in their heads and rheumatism in their legs, and their whole system poisoned by breathing foul air, are not likely to lay many eggs. Arrange a tight platform under the roosts, from which the droppings can be removed frequently, and cover the floor with coal ashes, dry swamp muck, or road dust; then, if the walls are kept well whitewashed, it will not be necessary to hold one's breath on entering the room. Fowls will not lay well in filth, nor is it pleasant to think of eating poultry that have breathed foul air for months before their appearance on the table.

Express Charges on Poultry.—A question that has been a source of much trouble to our poultry men for years past has been the high rates the express companies charge for the delivery of poultry, and their rates are not just or equal in consideration of the distance and the weight of the coops. Twenty-five dollars express charges on six birds shipped from New York to San Francisco is indeed excessive. As long as this exists the business of shipping fowls will not become so popular as that of sending eggs.

CALIFORNIA BEES AND HONEY.

NINETTA EAMES, CALIFORNIA.

Nowhere are so little trouble and expense necessary to make the "bee-business" a success as in California; and no other industry yields so large a profit for the capital invested. Owing to the mildness of the winters here, there is no loss of swarms from cold and confinement. In fact, there is rarely a month during the entire year that the little creatures do not find sufficient nectar for their own wants, thus obviating the necessity of supplying them with food. It is usual to extract honey as early as May, and, in favorable seasons, the process is repeated until far into October.

The principal honey-producing plants here are the various species of white and purple sages, the manzanita, sumac, yerba santa, wild flax and buckwheat, hoarhound, ceanothus, and golden rod. The sages alone produce the larger quantity of the honey shipped from southern California. The celebrated honey of Hymettus is no

STONE HONEY-HOUSE.

more finely-flavored or more translucent than that gathered from the gray-green stretches of sage everywhere thrusting up its fragrant spikes on the mesas and foothills of the Coast range. Here and there in a sunny, isolated nook of these mountains, meeting the fruitful levels of the valley, the traveler comes upon a Lilliputian city of hives dotting a sagey slope warm and teeming under the radiance of a summer sky (as seen in the engraving). If he be a philosopher, he may be reminded of Hugo's felicitous words: "There is nothing so like a soul as a bee. It goes from flower to flower as a soul from star to star, and gathers honey as the soul does light." These bee-ranches generally include from two to three hundred stands. It is poor policy to keep more than this number in one place as the range of a bee, unless urged by hunger, is about two miles.

In a good year, bees in California will average two hundred pounds of honey to the hive, but seventy-five pounds is considered a profitable yield. A single Italian colony has been known to gather a thousand pounds of extracted honey during the floral season. The "Extractor," now so generally used by apiarists, is a device which, if understood by the bees, would paralyze their energy which man has made proverbial. It consists of a tank of galvanized iron in which is hung a wire frame-work to hold the uncapped combs. By turning a crank, the frame-work or baskets are set in rapid motion, which causes the honey to fly out into the tank. Afterward this ambrosial sirup is drawn off into tin cans and glass jars, and set to ripen in the stone honey-house. This building is kept darkened and at a temperature of eighty or ninety degrees Fahrenheit. A perspective view of such a "honey-house" is presented in our engraving. In 1884, the honey export from California was estimated to be 9,000,000 pounds, San Diego alone sending one million pounds, half of which was in the comb. The total honey product of 1887 was 4,647,000 pounds, and the amount marketed in 1889 reached nearly 5,000,000 pounds.

The favorite hives used by California apiarists are the Langstroth and the Harbison. The Italian and Syrian varieties of bees are fast superseding the black bee in Western apiaries. They are believed to be more amiably disposed, and are better defenders of the hive. A strong Italian colony is capable of vanquishing its most formidable enemy, the *Galleria cereana* or bee-moth. The writer recollects the time when a single Italian queen bee sold readily in California for one hundred dollars. The quantity of honey now produced by California is but a fraction of the amount that remains unharvested from year to year in her limitless bee-pastures. It only needs time and coöperative effort on the part of bee-masters to make the ultimate product of her bees one of the most prolific and remunerative of all California industries.

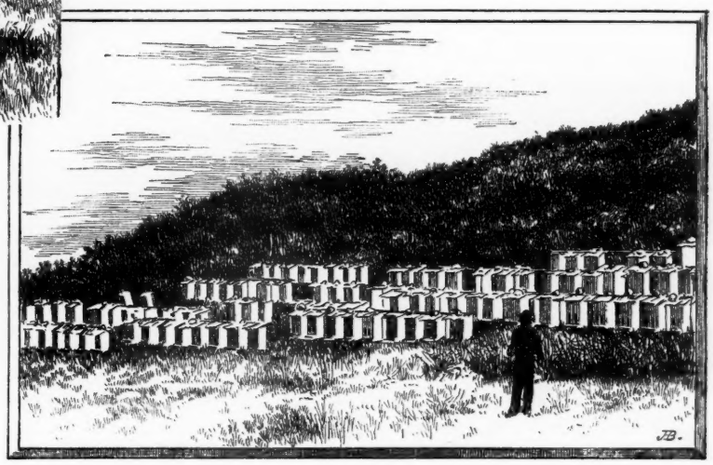
BEES FOR THE FARMER.

CHARLES B. COOK, AGRICULTURAL COLLEGE, MICH.

For several years past the American farmer has experienced exceptionally hard times. Crops have been small and prices low. As a result many of the farmers who have not had some other business to fall back on have felt the need of some other occupation to aid them in making both ends meet.

The person who has no decided antipathy against bees will rarely find another line of work that will unite with farming with as little friction as will apiculture, especially if conducted on a moderate scale. The climatic conditions affecting general farming are not the same as those that govern the success or failure of bee-keeping; consequently it does not follow that if the farm fails to be productive any year that apiculture will fail also.

We have had bees in connection with the farm for several years, and it has not been uncommon to have forty colonies of bees bring in more returns in one year than any other one thing connected with the farm. The only time that it is necessary for bees to interfere with farm work is during haying and harvesting when the honey flow is at its height. At this time it requires some forethought for the farmer who has not extra help



A CALIFORNIA BEE RANCH.

to give his bees the requisite care. At other times of the year, however, these two classes of work readily combine on the farm where all work is done in its season.

The farmer who will carefully read any standard book on bee culture and start with one or two colonies of bees, will be able to make his knowledge of the subject keep pace with the increase of his bees. By the time his apiary has grown to thirty or forty colonies, he will find himself able to care for his bees in an intelligent manner.

Bee-keeping is also well adapted to women, and it is a common occurrence to find the farmer's wife or daughters who have extra time at their disposal making bee-keeping a thriving business.

During the winter months the farmer can get his hives and supers ready for the coming season, and by this means perform much of the necessary work which would otherwise come in the busy season. The greatest trouble with most people who start in the bee business is that they are prone to buy a number of colonies, and set up business on a large scale. The result is that the bees increase faster than the keeper's experience, and consequently such an extended investment usually ends in failure. If a farmer who starts an apiary will begin with one or two colonies, thoroughly post himself on the subject, and make the first few colonies pay for

themselves—especially if he has limited means—before they are allowed to increase, that farmer is almost sure of success. In case bees should not be adapted to his locality, or he not adapted to bee-keeping, the beginner will discover his mistake before he suffers loss.

The person who has always regarded bees with fear and trembling will find, after a little experience, that with judicious handling stings will be largely avoided. The beginner should be provided with a bee veil to protect the face, a good bee-smoker, and, if very sensitive to stings, he may wear gloves, and in this manner avoid stings entirely. The person who begins apiculture with that careful forethought and energy that knows no failure will be almost certain of success, and will find in bee-keeping a pleasant and profitable occupation.

A GENUINE COWBOY'S SADDLE.

The beautiful cowboy saddle illustrated herewith was drawn from a photograph sent us by a Montana correspondent who is himself a cowboy. He describes the saddle and its uses as follows: An ordinary saddle would never on earth stand the racket of cow work. You see, when a puncher ropes—I guess in the East you would call it "lassoes"—a big healthy four-year old steer, which is lighting out on a salvator gait, and undertakes to stop him with a jerk, he has a big contract on his hands. When a steer is running, and you rope him, he runs still faster; then you "take your turns," that is, you twist the end of the lariat, which you have in your hands, around the horn of the saddle two or three times and jerk your cayuse up short; the steer comes to the end of the rope or lariat, suddenly turns a double somersault, and lands on his back, pawing the air. So you can see that it takes a good strong saddle to stand the jerk. The horns of our saddles here are made of steel, and are strongly fixed to a mahogany or ironwood tree. The whole thing is then covered with wet rawhide, which shrinks on, and then the leather parts of the saddle are put on. A saddle ordinarily weighs thirty-five to forty-five pounds, and nearly all good cow-puncher saddles are made in the range country. All others are worthless botches. The saddle I send the photograph of is not particularly ornate or costly. It represents a style made at Miles City, on the Yellowstone. I paid $35 for mine when it was new, and got the photograph thrown in. Fine saddles are the desire of every cow puncher's heart, and they are willing to pay big prices, although they are not willing to take care of them after they get them. A man often has a riding outfit costing $150 or $200. Indeed, these are average, although some have outfits that come much higher. Silver inlaid bits, spurs, guns, conchas and so on cost like not a little out here.

A MONTANA COWBOY'S SADDLE.

How to Unharness a Horse.—In no little act frequently repeated do farmers waste more time than in harnessing and unharnessing horses. Watch the operation any time and see if the lines are not rolled up separately on a single harness when the same motions would pull out and roll up both at once; see if each girth is not stooped for when with one grab both might be secured. If the horse be well broken, so that extreme care is not needed, unbuckle the lines before stopping, and, on jumping from the wagon, alight on the near side. First loosen the crupper buckle, if one be used, next the tug, then the holdback, and put this up. Walking slowly to the horse's head, draw out the tug, and, as the hands complete the usual figure 8, let them at once grasp the lines, both together, draw them out, and double them in the bit. Then, by twisting the ends once around the roll and putting them through it, their weight as they hang down will keep it compact, with no need of the slow tying process. Going directly from the lines to the other holdback, the second tug may be coiled up as the horse is walking to the stall. System in handling a double harness saves still more time.

A CONVENIENT COMBINATION BUILDING.

The illustrations herewith show a combined workshop, poultry-house, and summer pig-pen, that has many points of excellence. A perspective view of the structure is presented in Fig. 1, and the

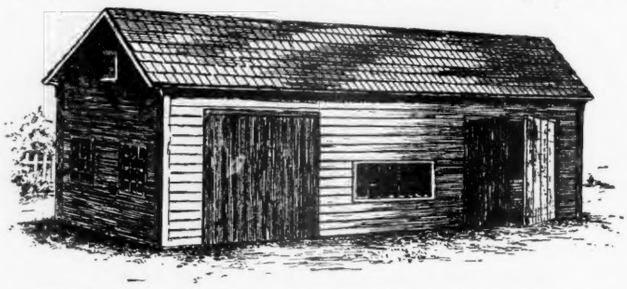


FIG. 1. PERSPECTIVE VIEW OF COMBINATION OUTBUILDING.

ground plan in Fig. 2. The workshop is at one end where a good light can be secured. It has large double doors so that a wagon or cart may be run in for repairs, or temporary shelter. The eggs from the poultry house can be gathered in the shop, by placing a hinged board in the partition behind the nests,—a very convenient and cleanly plan. There is no ceiling to the workshop, there being no attic floor over this part of the building. This gives room to hoist sleighs, sleds, and other articles of winter use, and store them for the summer over the poultry and swine quarters. A ring, or hook, is securely fastened to the ridge pole from which slaughtered pigs may be suspended for dressing. The poultry house is placed in the middle to secure warmth in winter. A yard is also arranged for them behind the building, as is also a pig-yard. Many farmers keep pigs only from spring till fall. In this case the movable partition in the front of the pen may be removed when the swine have been slaughtered. The floor is then thoroughly cleaned and littered, when it will provide an excellent place for the fowls to scratch for grain during the winter. The large doors should of course be kept open during the warm, pleasant portion of the day, particularly if they face the south as is intended. This open shed for fowls is specially important if eggs are desired in winter, in regions where snow lies thick upon the ground.

Close Mowing.—There is nothing gained by cutting upland grass too close. Some farmers mow their meadows as close as possible, and make the turf look as if it had been shaved with a razor. Of all grasses timothy probably suffers the most from too close mowing. It should not be cut below the first joint, and better still above the second. When cut through the bulb, or too near it, the plant is often killed. The meadow will start much quicker if the grass is cut about two or three inches high than when below that height, and the pasturage which will be gained will much more than bal-

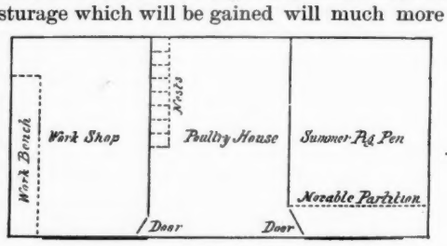


FIG. 2. GROUND PLAN.

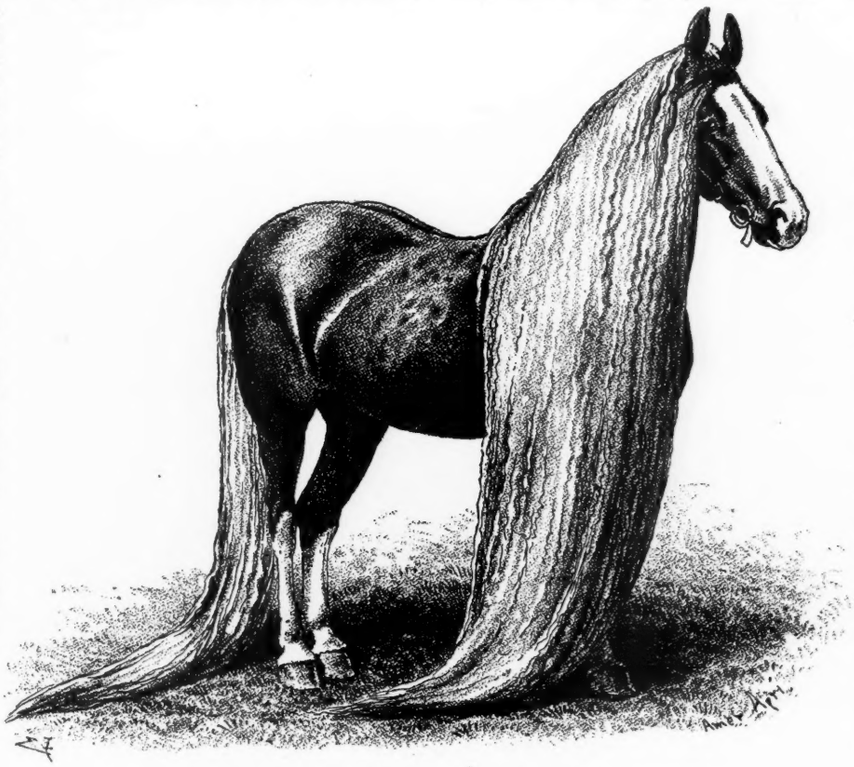
ance for the extra amount of hay of doubtful quality that is obtained by close mowing. Finer grasses can be cut lower than coarse ones, and lowland meadows suffer but very little from being cut close, and possibly benefited, as the sun can thereby reach the ground and dry out the excess of moisture. Our object in this note is to speak against the close cutting of upland meadows, especially timothy, when thereby the roots are unduly exposed, and often killed.

LINUS—THE EQUINE CURIOSITY.

MIDY MORGAN.

When we first hear of a freak of nature in the animal world we look for something monstrous. Some creature unusually small or abnormally developed in size. It is rare indeed when a departure from the recognized rules of nature manifests a peculiarity not only harmless but a peculiarity of unusual beauty. The chestnut horse, "Linus" is one of these rare examples. The unusual part of his structure is a most wonderful growth of mane and tail. The mane measures nine feet nine inches. The tail measures twelve feet three inches. The hair of both is soft and fine, more in texture like human hair than horse hair. Linus is seven years old, is a clear chestnut with both hind legs white to the hocks; in color the off foreleg is a mealy chestnut to the knee; the near foreleg is only a little lighter in color than the animal's body. His face is perfectly white and his expression is excellent. His eyes are clear and full of intelligence. His ears are shapely and, from their play, those familiar with horses can perceive that Linus observes everything around him, and does not lack perceptibly in equine intelligence.

When this horse was two years old he was broken to harness, about which time the growth of his mane and tail began to attract attention. As the hair grew in length and beauty it was decided to change his form of work, and at five years old he was broken to saddle use. The pedigree of Linus as given by his custodians is a cross between a Clydesdale and a French coach horse. One parent is said to have had an out-cross. From his size, shape, and style it seems that his French ancestry is more strongly marked than is his Scotch descent. His legs, from the knees down, are shorn of what would be a most luxuriant growth of soft, silky hair. This precaution is taken to insure comfort to the animal although it detracts in no small degree from his distinguished appearance. Linus, who is a stallion, stands sixteen hands, and is a handsome specimen of a first-class brougham horse.



THE LONG-MANED STALLION LINUS.

RAW OR COOKED FOOD FOR SWINE.

To the inquiry of a subscriber in Missouri as to the average gain of swine on raw corn on the ear, steamed corn on the ear, cooked corn meal, steamed clover hay, and as to the advantages of steamed food, F. D. Coburn, author of "Swine Husbandry" replies: It should be borne in mind that at least four important factors enter into possible results, viz: The man, the breed, their condition, and the surroundings. Some men do their feeding with animals in and under such conditions that not a pound per bushel is realized in gain from the raw corn consumed. Sometimes, although not often, as meager results are obtained from cooked food, but generally the man who is so painstaking as to cook for his stock has that which is fairly good, giving it the care and surroundings conducive to yielding more liberal returns for what it consumes.

As high as twelve pounds of live hog are sometimes obtained per bushel of corn, and nine or even ten pounds are not uncommon, but taking the country over I doubt if the average for all seasons is above seven pounds, when corn on the cob is the sole reliance. Much corn is fed out, especially in severe winter weather, and at other times, to unthrifty animals from which no appreciable gain is realized — it serving merely as a maintenance ration. Limited experiments with boiled or steamed corn have shown, under favorable circumstances, a gain in one instance of eighteen pounds, in another fourteen and a half pounds, in another twelve pounds, and another ten pounds, or an average (if possible) of nearly fourteen pounds per bushel of corn. From ten to twenty pounds per bushel have been obtained from cooked meal, and the average of experiments of which reports are available show a gain of about fifteen pounds or above. These figures are all suggestive only pointing out what has been done—at least so far as cooking is concerned—with hogs in limited numbers in presumably good hands. Large numbers, of miscellaneous characteristics, some lacking in thrift and constitution, indifferently and unsystematically cared for would be almost sure to fall below. Sound grain steamed is not necessarily unwholesome for hogs, cattle, or horses, but there are few instances in which it would be either desirable or practicable to confine horses or cattle to such a diet, or to steamed clover.

SHOEING TO PREVENT INTERFERING.

J. FLOMERFELT, NEW JERSEY.

Some horses are so constituted as to cut their ankles, or "interfere," as it is usually expressed. This is often a serious detriment to the usefulness of an animal. In some cases a horse that naturally travels without striking his ankle is made to do so by not being properly shod. And in almost all cases, if the cause is known, and the smith is skillful, he can shoe a horse so as to in a great measure prevent the contact. It is well known that when a horse trots he has but one foot on the ground at a time. Consequently there is an instant when the horse's weight is all on one foot, which causes the muscles of that limb to be very rigid, while the companion leg is relaxed or simply swings. Take, for example, a horse that strikes his left hind leg with his right one. The instant of contact is when his whole weight is on his left leg, and consequently rigid, the other on the swing. But why does he hit his ankle? The cause is in the shape of both hoofs or shoes. If the inside of the left foot is lower than the outside it will cause the ankle to shoot inward at the moment his weight comes on it, and that is the moment his right foot passes; consequently, he cuts one ankle with the rim of the other shoe or hoof. The remedy is to cause the ankle to shoot outward by lowering the outside of the hoof, and making the inside of the shoe higher and heavier than the outside, so that when his foot is on the ground his weight will reverse the tendency of the ankle. Make the toe lowest on the outside, and the outside calk lower and lighter than the inside one. Do not rasp the inside of the hoof, as it weakens it and lets the shoe draw that way. The inside calk should be longest the same way of the foot, so as to insure as much as possible a sure footing on that side, because if interfering horses, and many that do not, as a rule, step on ground lower on the inside than on the outside, it will cause them to cut simply because the ankle is pressed inward and in the way of the passing foot. The nail-heads and the edge of the shoes, as well as the clinches, should be as minim as possible.

Many smiths object to making the inside of the shoe higher and heavier than the outside, thinking that it is the shoe that causes the interfering, losing sight of the whole weight on the ankle injured, and that the passing foot is hanging as it were in the air; such being the case, however, it will appear that if the inside of the shoe is

heaviest it will naturally pull that part downward and outward. Before an interfering horse is iron shod he should be shod with leather on the inside of the hoof (this will let the outside wear off), and his mode of cutting watched, and his feet shaped accordingly.

BUYING BARNYARD MANURE.

T. GREINER, NEW YORK.

The value of yard manure is a somewhat uncertain quantity, and the purchaser's own good judgment must in each case give the final decision concerning the price he can afford to pay for the article. The large range in the value of stable manure, owing to different methods of feeding, to the state of preservation of the manures, and perhaps other causes accounts for the wide variations found in the analyses and valuations of such manures given by chemists. The amount of the three chief substances of plant food contained in a ton of 2,000 pounds of yard manure is variously stated to be from eight to twelve pounds of nitrogen, seven to fifteen pounds of potash, and four to nine pounds of phosphoric acid. A ton of fresh manure consisting of the dry excrements of fairly-fed working horses, and a little urine-soaked straw contains about ten pounds of nitrogen, four pounds of phosphoric acid and ten and one-half pounds of potash. While we have no means of knowing in what exact degrees of solubility or availability the nitrogen, phosphoric acid, and potash exist in stable manure, we may well suppose that all these plant foods will be utilized by our crops to the full extent that they are in our best concentrated fertilizers, only perhaps in a somewhat longer period. Consequently I think we are justified in rating them pretty high. At present prices of commercial fertilizing substances, the value of a ton of this fresh horse manure may be computed as follows, viz:

10	pounds nitrogen at 17 cents	$1.70
4	" phosphoric acid at 7 cents	28
10½	" potash at 4 cents	42
	Total	$2.40

Were we to buy from manufacturers of concentrated (so-called commercial) fertilizers the same quantities of plant foods we find in the ton of fresh horse manure, we would most likely have to pay about three dollars for them, for the manufacturers have to add cost of mixing, bagging, handling, freight, etc., to the original price. Hence, if we can get a ton of fresh horse manure at $2.40 or less without having to incur additional expense for hauling it, we make a better bargain than if we buy the average manufactured fertilizer at current rates.

Fresh cow manure varies but slightly from fresh horse manure in chemical composition. Hog and sheep manure may have a somewhat larger percentage of nitrogen, and perhaps also of phosphoric acid, but a smaller one of potash. On the whole, we will not be far out of the way if we concede to all these manures, when fresh, about an equal money value, ton for ton. Dry straw also differs but little from fresh manure in composition and fertilizing value. If used freely for bedding and soaked through with urine, it will not lessen the value of the manure. This should not be understood to mean that clear straw trodden under the animal's feet in the barnyard, and soaked with snow or rain water, with at best a slight admixture of excrement should be considered worth as much as good manure or as much as dry straw, pound for pound. Clear water adds to the weight, but nothing of fertilizing value, while urine adds also to the stock of nitrogen and phosphoric acid and, therefore, should be saved wherever possible.

A heap of stable manure contains at no time a greater amount of plant foods than when first made. Nothing, so far as real fertilizing value is concerned, can be gained by storing or composting it. We may get it finer and in better condition for more immediate use by the plants, but we do not add anything of value to it by composting. If we wish to make use of every pound of plant food contained in the fresh stable manure, we must draw it to the fields as fast as made, and spread it at once. In a series of experiments made at the Cornell University Experiment Station it was found that horse manure having been left outdoors in a loose pile for six months had at the end of that time not only lost thirty per cent in weight, but that the resulting compost was reduced to the following amount of plant foods per ton, viz:

9	pounds nitrogen at 17 cents	$1.53
3	" phosphoric acid at 7 cents	21
6	" potash at 4 cents	24
	Total	$1.98

The greatest loss through fermentation and leaching, we see, is in the potash, and next in phosphoric acid, while that in nitrogen (contrary to the old notion of "escaping ammonia" in fermenting manure) is comparatively slight. The compost, after all these losses, is still worth about two dollars, and therefore about twenty per cent less, ton for ton, than the fresh manure.

In deciding about the price which the user can afford to pay for any given sample of stable manure, he will have plenty of opportunity for the exercise of good judgment. Not only the quality and value of the manure itself, but also the cost of hauling must be taken in consideration. If it costs us one dollar to haul a ton from place of purchase to the field, we must be able to get the manure at not more than the figure representing its true value, less one dollar. In making estimates of the manurial values of stable litter, we may take fresh manure from well-fed horses or cows, consisting of excrement and urine-soaked litter, as a standard for comparison. A ton of such manure is worth, at current rates of plant food materials, about $2.50, and even more when compared with prices of our commercial concentrated fertilizers. The higher the animals were fed, the more valuable is the manure. That from animals being fattened or forced is always richest in plant foods. Animals that are merely "wintered"—just kept alive on a straw diet—give manure of less value. Straw soaked full of rain or snow water has probably but little over one-half of the fertilizing value of good manure.

A ton of compost from manure exposed in a loose pile to the elements for a number of months, which in its fresh state had a fertilizing value of about $2.50, is still worth about $2, more if from highly-fed animals or if kept under shelter, or otherwise well preserved; less if spread in a thin layer and long exposed to leaching and soaking, or if originating from straw-fed animals, or if sawdust, soil or sand has been the only bedding material used. The price asked by the seller of stable manures is seldom regulated by the quality or value of the article itself, but invariably only by local conditions of supply and demand. It is rarely the case that the buyer is required to pay a price approximating the real value of the article. Consequently good stable manure, where obtainable, is often or usually one of the very cheapest forms in which the farmer or gardener can procure the plant foods needed for his crops. In some places fifty cents is asked for a "load," in others the ruling price is one dollar, seldom more, but the size of the load is usually left to the discretion of the purchaser, who may put on all that his horse or horses can draw. Here again is considerable latitude for good judgment, both in making the bargain and in loading and hauling the manure. If a load is sold at a certain price with the understanding that "load" means all that the buyer's team can draw, it is the buyer's privilege to keep strong, well-fed horses and well-greased capacious wagons, and to pick out a time of good roads for the job of hauling. Usually manure can be bought cheaper by the two or three-horse load than by the one-horse load, for the one horse draws half wagon and half manure, while the additional horse or horses draw manure only.

How can the manure be measured? The manure-buying farmer is usually an expert in "guessing" the weight of his load. A span of ordinary 1,000-pound horses, as usually kept in our rolling sections and on roads by no means too good, can just handle a 2,000-pound load on wheels with comparative ease, while two tons or over are not too much for heavy horses on smooth nearly level roads. More can be loaded and easily hauled on good sleighing. The bulk of the manure must of course be the chief guide in estimating its weight. A cord of average barnyard manure (128 cubic feet) weighs about 4,500 pounds, so that a ton of such manure contains about fifty-seven cubic feet. To estimate the weight of a pile of manure multiply the figures representing length, average width and average height, and divide by fifty-seven. This will give the numbers of tons in the heap. A wagon or sleigh box twelve feet long and three feet wide loaded with manure nearly two feet high (allowing for loose packing) contains a good, plump ton—more, if the manure is wet and compact; less, perhaps if it consists largely of somewhat dry coarse litter. In the computation of the commercial value of stable manure, no account could be taken of the carbon in it. Yet this constituent gives a great additional advantage over concentrated or chemical manures which supply the essential plant foods and other mineral elements but have not the beneficial mechanical effect to be obtained from the decomposition of the carbonaceous matter contained in barnyard manures.

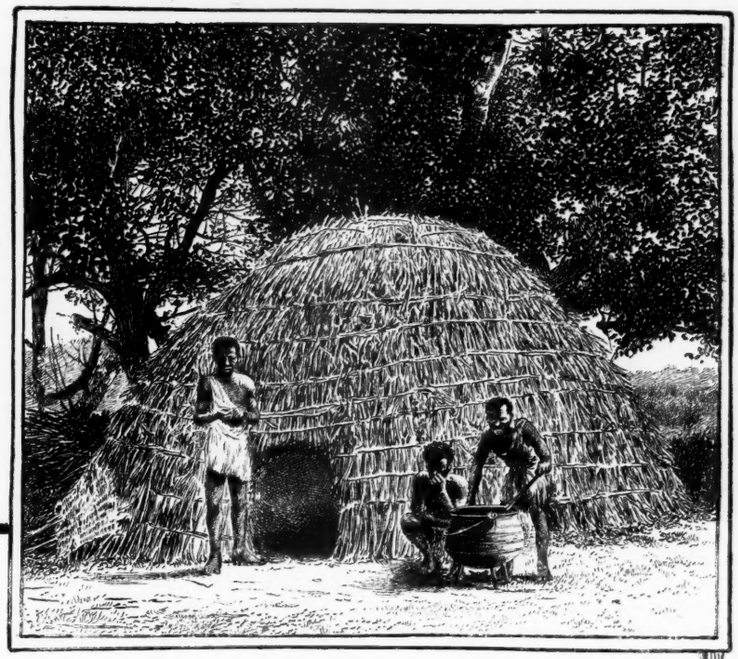
Keep Your Stock Comfortable.—It pays to keep stock comfortable. Exposure, unkindness, and fretting defeat, in a measure, the ends for which food is given, and result in corresponding loss.

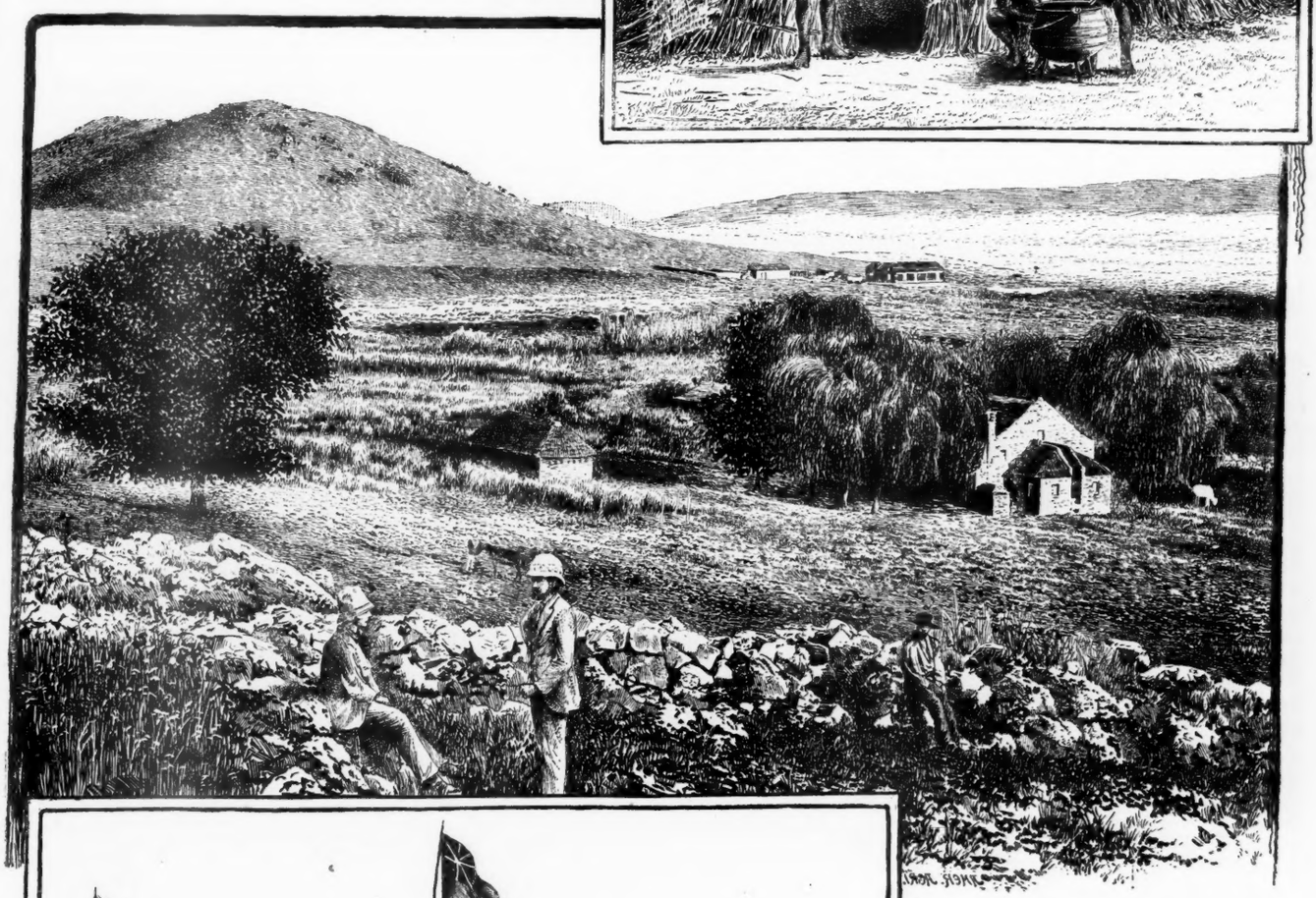
THE SHEEP INDUSTRY OF SOUTH AFRICA.

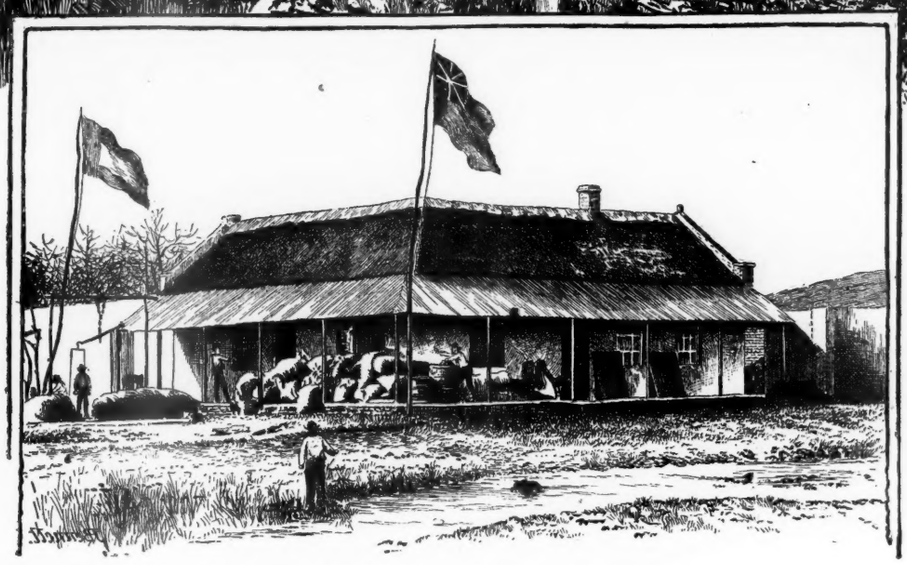
A. RUSSELL, SOUTH AFRICA.

In South Africa, with its equable climate, abundance of black labor, and fruitful soil, the hardships of a farmer's life, compared with that in England and even America, are inconsiderable, and hence among those who adopt farming as an occupation are many sons of English families for whom no profession can be found. The pastoral and agricultural resources of South Africa owe their development to the Boers, the descendants of the first Dutch settlers. These are exclusively a farming class, and the exports of the country from these sources are mainly the outcome of their industries. Of these, sheep-farming is one of the most considerable, and wool figures as one of the chief shipments to Great Britain, where most of our products are first sent.

The average size of a farm as allotted by the Boers is 3,000 morgen, equal to 6,000 acres, and the boundaries were formerly determined in a rough and ready style; a man mounting a swift horse set out to gallop, and the ground he compassed in an hour became his property. In the Cape Colony and in Natal where the conditions of old settlements have broken up past customs the sheep are alternately shifted from one pasture to another, and the essential, therefore, is to secure extended runs. The cattle and sheep are entirely dependent on the natural forage for subsistence, and no matter how dry or bad the season no artificial feeding is resorted to, and no shelter provided for the stock. In the central parts of South Africa where the lands are even more sparsely occupied than in the South, the Boers follow the customs of the patriarchs. At the approach of winter, the family wagon is inspanned, a few scanty articles packed in, with the necessary provisions, the flock collected, and the entire family abandons the homestead to the charge of







SOUTH AFRICAN FARM SCENES.

a Kafir, and trek either to the Bushveldt, one or two degrees nearer the Equator, or sometimes to districts where sheltered valleys abound in the protective embrace of high mountains. Here they shepherd their flocks until the undulating plains of the higher altitudes are clothed with spring's verdure. The sight of these flocks and herds returning from their winter migrations is often quite inspiring. They look sleek and fat, and are so wild that several herders on horseback are necessary to keep them together.

The larger proportion of South African sheep are of the stock of the Spanish Merino of Australia, which has become acclimated, and seems peculiarly adapted to its climate and pasture, and under careful selection and favorable conditions they preserve their reputation as yielding the finest wool in the world. The native sheep of South Africa, known as the Cape sheep, is clothed with a black-brown fleece and has a burdensome weight in its heavy flat tail which is almost entirely composed of fat, and weighs often over thirty pounds. It is esteemed as a great delicacy, and the fat is much prized in culinary preparation. The inversion of seasons which demarks Africa and Australia from the Northern Hemisphere makes September the springtime, when the earth is full of tender shoots and garlanded with blossoms. It is then that a separation of the flocks takes place previous to the lambing, and thus the young lambs grow up and attain their strength in the warmth and verdure of summer. The shearing of the flocks takes place twice yearly, in September or October, and February or March. The average weight of fleece is about five pounds, and of this it is estimated that the loss in scouring amounts to sixty or seventy per cent. The price in all cases is dependent on the quality, and the ordinary wool buyer is able to estimate this by the district which has produced the wool. The shearing is for the most part performed by natives, who, by a little patient instruction become the intelligent coöperators of the white man on the farm, for the small wages of from $2 to $4 per month, with rations which are entirely of nealie meal.

A gentleman, who has made a very successful colonist in Natal, told me that among his wide acquaintances in that colony he had invariably noticed that the most successful of them, in nine cases out of ten, were those who commenced with the barest means, and increased their knowledge and resources side by side. The man of capital is too frequently led into experiments that result in ruin. One of the most successful instances of sheep-farming on a small scale that has come under my notice was managed by a woman. She had commenced with a flock of eleven which were actually carried to the homestead. They were weak stragglers from a flock that had been driven some hundreds of miles to the market at Natal. The owner merely left them by the roadside to perish, and told the woman if they were of any use to her to take them. My acquaintance with her dates from the period when the flocks had reached 2,000, and she was renting extended runs for their pasture. From these she obtained from 500 to 600 lambs yearly, and the sale of wethers yearly amounted to from 200 to 400, at an average value of $5. In flavor the mutton of South Africa compares favorably with that of New Zealand which at present takes a high place in the English market, and it is only due to apathy of enterprise that South Africa does not compete for a share of patronage.

The principal drawbacks to farming in South Africa are the disadvantages of a new country, lack of markets, and difficulties of communication. Yet the patient and unprogressive Boer finds nothing to complain of. He takes his wool to the nearest market with his ox wagon, *Vrouw* and *Kinders* accompanying the expedition, which may sometimes be a matter of hundreds of miles, and the wool bought by some English trader, sometimes entirely for barter. Many of these traders have made easy and princely fortunes, though the Boer, who puts no value on time, chooses sometimes to take a day or two to make up his mind before concluding a bargain. This once done, he takes readily the goods he requires and is soon disposed of as a customer. Scab is the greatest enemy the farmer has to contend against among his sheep, and wherever the conditions of old settlements prevail, as at the Cape Colony and Natal, stringent laws are enforced to compel precautions against it. Certain kinds of grasses, too, produce seeds which damage the fleeces, and depreciate their value correspondingly. Yet none of these conditions are permanent, and indications for improvement are apparent in many directions. With intelligent methods, systematic management, and better means of communication, South Africa offers advantages for farming unexcelled in any country. The time is not distant when other Europeans, besides English, will emigrate to South Africa.

TOBACCO—CUTTING AND CURING

W. F. ANDROSS, CONNECTICUT

Cutting and Curing.—A small saw, made for the purpose, is the best instrument for cutting, though various forms of hatchets are serviceable implements if the plants are not overgrown. The plants as cut should be laid on the ground very carefully at right angles to the row, two rows with the butts toward the row and two with the butts away from it. This allows the lather to take four rows at a time, which is the most convenient number, and have the butts of the plants convenient for picking up rapidly. Six plants to the lath in an ordinary growth is quite sufficient. The plants should be well wilted before lathing, though care should be taken that they are not exposed to the sun, as there is danger of sunburn, which renders the affected leaves worthless. Burning takes place in a very few minutes after the proper exposure, and this point must be watched carefully. When the lath is full it should be taken from the lathing horse by the hander, and placed upon the wilting frames, but should never be laid down again. The lath may hang on the wilting frames for several days if necessary, but the sooner they are hung in the building the better. They should not be allowed to hang out during a heavy rain. Tobacco should never be allowed to lie on the ground during a rain, or through the night. The laths should be hung eight inches apart in the building, and a thorough ventilation secured. When there is an abundance of moisture in the atmosphere the building should be kept open days, and closed nights. When the curing season is dry, and there is not sufficient moisture, the opposite rule should be followed. In a muggy, damp spell, when there is great danger of sweating, the building should be tightly closed. Care should be taken not to admit more light to the building than the weather renders necessary in order to admit air, as too much light—particularly sunshine—is thought to be productive of white veins and bad colors. The length of time necessary for the crop to hang before taking off the laths, and stripping varies somewhat. It certainly must be long enough for the leaves at the top of the plant to properly cure and assume the requisite color and the stems or large veins are thoroughly cured. It is also best for the crop to hang through one or two "damps," even after the leaves have the appearance of being completely cured, as these even up the colors, and take the wrinkles and puckers out of the leaves. Care must be taken not to get too much dampness in the leaves before taking down, especially if the weather is warm. This will certainly cause the pile or bales to heat, and when the heat is once started it is not an easy matter to stop it and prevent damage.

Tobacco should not be allowed to remain on the stalk after taking down for more than two or three days, and not that if the stalks have been frozen. The leaves should be immediately stripped off and packed in bales. The baling box is twelve inches square on the inside, and three and a half feet long for seed leaf; for Havana it is two feet nine inches to three feet. The bales should never be laid or packed away more than one deep in the early part of the season or until the weather is cold, and they should be covered with a heavy paper wrapper, which protects them from atmospheric changes. Nearly all of the buyers now insist on having the crop put up and delivered in this way, as the old time custom of assorting the leaf at the grower's hands is becoming obsolete. The fine distinctions and grades that are now required in the assorting render it impossible for the average grower (especially if he is a small one) to do justice to, or meet the requirements of, the trade. To sell in the bundle or bale is now the customary way, and, of late, growers who have been to the trouble of assorting their crop have had their labor for their pains, as they find they cannot get more money than before it was assorted.

Clean Out the Black Knot.—There is no good reason for keeping a plum or cherry tree full of black knots. Each one is a place where countless spores are produced, and these, spreading to other trees, will cause new knots to grow. Some have recommended the application of kerosene to the knot, as it will kill it, but injury may be done to the healthy parts of the tree. A better way is to cut the knots away and burn them. If the knife does not pass several inches below the knot, it may develop anew upon the tip of the stub. Badly infested trees should be cut down bodily and all the knots burned. These knots are found upon some kinds of wild cherry and plum trees, and these, whether in the lane, roadside, or forest, should be stripped of their knots. If every one who owns land would see to it that all the black knots were removed it would not be long before we, especially in the Eastern States, could grow profitable crops of plums and cherries.

NUTS—OLD, NEW, AND CURIOUS.

The Liche nut (Fig. 1) is an interesting Chinese production, probably first introduced into this country by immigrants from China, but now to be found on sale at many of our fruit stores. The nuts have a delicate russet-colored shell, more easily broken than the soft-shell almond, inclosing a rich-flavored, date-like pulp, surrounding a smooth seed with irregular depressions and about the size of a date stone; hence the name of "Chinese dates" sometimes given these nuts. No information in regard to their cultivation is obtainable, but they could, no doubt, be raised in certain localities in this country, and probably yield profitable crops.

Some American plants seem to thrive better away from home than in their native land, and so what we have been accustomed to call the English or European walnut (Fig. 2) (*Juglans regia*) is now grown in the greatest perfection and over a very wide range of territory in this country. This nut flourishes and bears annual crops as far north as Narragansett bay on the Atlantic coast but, like most fruits which require a long season, it reaches its greatest perfection in an equable and medium temperature, that allows of a steady, uniform growth, such as it secures on the Pacific coast and in some of our Southern States. Under such conditions the shells are thinner, the nuts larger, smoother, and better filled than elsewhere.

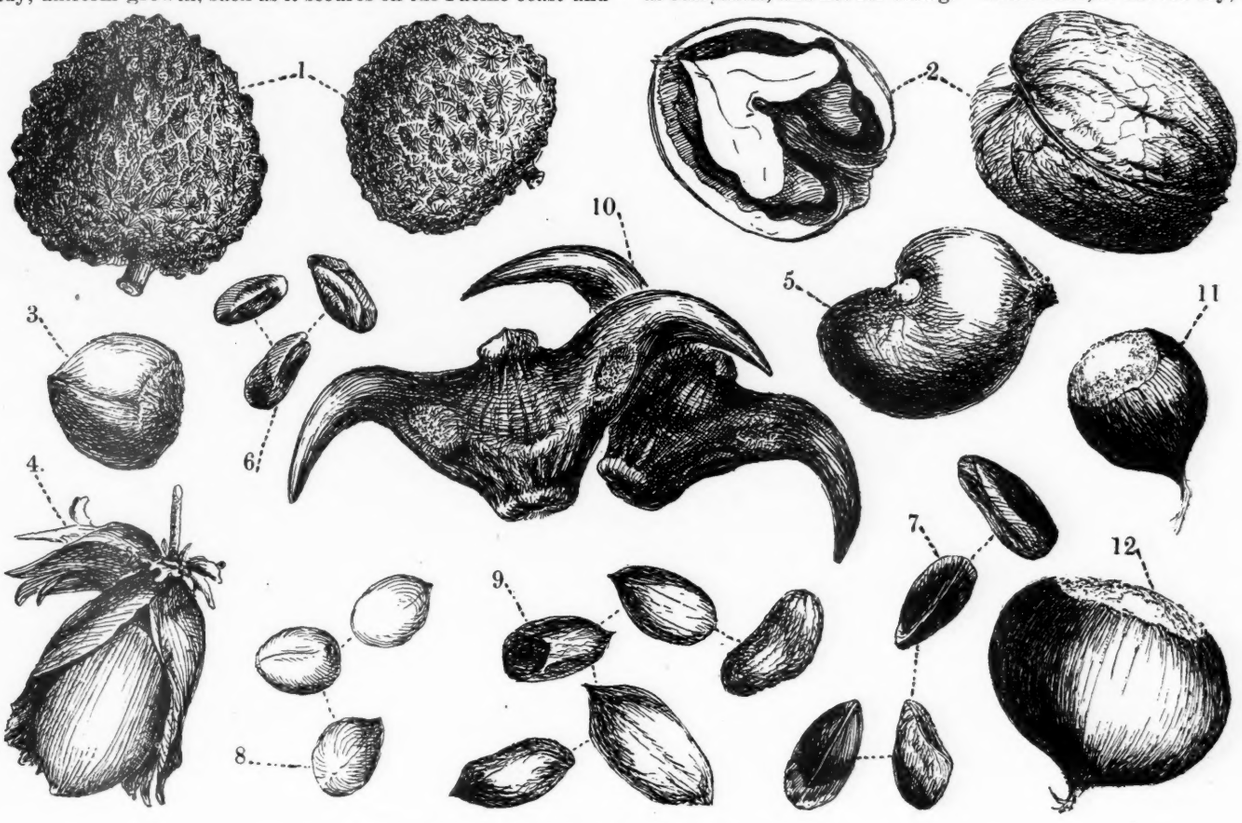
As an illustration of the influence of popular taste, we may say that a variety of the English filbert (Fig. 4), which is much larger than our native hazelnut (Fig. 3), sells better when offered in the husks. There seems to be no good reason for it except that it is supposed to be an English custom to serve them in this form. Other varieties of the filbert and nuts in general are usually most carefully divested of their outer coverings, assorted to uniform sizes, and even polished and oiled to give them an attractive appearance.

Cashew nuts (Fig. 5) are brought from the West Indies, and may, perhaps, thrive in some of the warmer parts of the Pacific coast. The cashew tree bears an edible fruit, from which hangs the smooth and curiously-shaped nut. The kernel or meat is very palatable, while the surrounding skin is bitter and astringent.

There is a steady but not a large demand for pistachia nuts (Fig. 7), best known to Americans from the beautiful green color which they impart to ices and confectionery. They are much used by oriental nations. Most of the pistachia nuts used in Europe and America are grown on the shores of the Mediterranean, and although slightly larger it is said that they are not equal in flavor to the smaller native variety brought from Persia (Fig. 6). The nuts are covered with a delicate husk, which rubs off, and is blotched with brilliant red and purple, while the kernel is bright green. These nuts grow in clusters on small trees.

No description of the common peanut (Fig. 9) is necessary, but there are occasionally new varieties introduced worthy of some attention as, for instance, the so-called Spanish peanut (Fig. 8), although raised in Virginia. The kernels are rounder and more delicate than those of the common variety, consequently more highly esteemed by confectioners; but the habitual "peanut eaters" like the others best. Cuba peanuts are occasionally seen in our markets, and they are three or four times as large as the home-grown, and of a reddish color, supposed to be due to the reddish soil in which they are grown.

The so-called Chinese chestnut (Fig. 10) (*Trapa*) is not a chestnut at all, but the seed of an aquatic plant found in swamps and ponds. The nuts have a curious resemblance to the horns of cattle, and are of a dark brown or black color, but filled with a white, sweet meat or kernel. They are imported and sold in this country as curiosities, and not for eating. When fresh, or not too dry, they may be sprouted by placing them in a jar of water, but they have rarely been cultivated here, although it is said that they are grown in France. Street venders often have these nuts for sale, with a sprig of watercress—which somewhat resembles the true leaves—stuck into them for the purpose of deceiving purchasers.



NATIVE AND FOREIGN NUTS.

The illustrations for these nuts were all drawn from nuts bought at New York fruit stores, and with one exception are of very recent introduction. This one is the large chestnut (Fig. 12) imported from southern Europe and sold under various names, such as French, Spanish, and Italian. If our smaller American chestnut (Fig. 11) was not considered sweeter and better, there would be a still greater demand for the foreign varieties, but as it is they are always wanted to make up fancy baskets of fruits and nuts during the holidays. They are usually very prettily arranged, and people buy them to decorate their dinner tables or to distribute among friends in place of the more common bags and boxes of candy and bonbons.

The following named nuts are also worthy of consideration, and some of them if not all may prove to be of considerable value. The Japan chestnut is said to be as large as the Spanish, and some persons claim that it is as sweet as the American. It has not as yet appeared in our markets, although many nurserymen offer the trees

for sale. They come into bearing when quite young, and the trees are said to be quite as hardy as the American chestnut.

The extensive use of nuts by cooks and caterers has given rise to a new branch of trade; that is shelled nuts, and now nearly all kinds can be bought shelled and ready for use. The shelled kernels, if kept in tight glass jars, do not deteriorate in flavor, and in some cases, as in that of the black walnut (*Juglans nigra*), it is claimed that they keep much longer and better than in the shells. The white walnut or butternut is a greater favorite than the black walnut, the latter having a strong flavor not generally relished.

Salted and well-roasted almonds are now considered almost indispensable among the accessories of a well served dinner in our larger cities. Hazelnuts, walnuts, and often other kinds, are served in the same way, but the almond is a general favorite. The Texas pecan-nut is exceedingly popular, and the trade in this nut is now immense, although it was scarcely known commercially twenty years ago. The trees which produce these nuts were in years past cut down for firewood, or even to get a bag of nuts, but they are now carefully preserved, and not only the old trees cherished, but new ones planted in large numbers, and yet the demand for pecans is far ahead of the supply. The kernels or meat of the pecan is highly valued by confectioners, and in no form are they better liked than in "plarines," a Mexican confection made by dropping the shelled kernels into melted sugar, clean brown and unrefined, as it is found at its best on Southern plantations. An enterprising confectioner has taken out a patent for their manufacture, and is said to be doing a flourishing business.

THE TUBEROSE (*Polianthes tuberosa*).

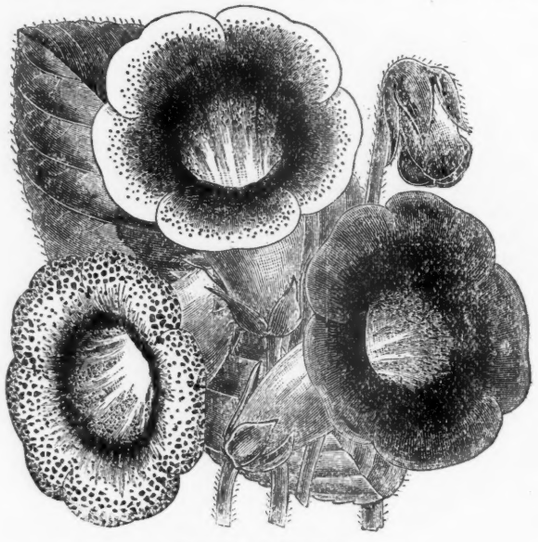
Every one who has a garden, or a taste for flowers, knows the tuberose. The cultivation of the bulbs was, for many years, confined principally to the Italian nurserymen, but for the last twenty-five years they have been grown in this country. At the present time the markets of the world are largely supplied with American-grown bulbs. The tuberose is a gross feeder and succeeds best in a light loam, but will grow in any soil providing it is moist and rich; rich it must be regardless of other conditions; its complete requisites being heat, water, and manure. If these are proportionate, it matters not how much there may be, the plants will consume it, and by their growth show its importance. For field culture prepare the ground as for a crop of potatoes; plant in drills thirty inches apart and place the bulbs four inches apart in the drills, three inches below the surface. Keep the cultivator constantly going, not to kill weeds so much as to make tuberose bulbs. After a frost take up the bulbs, cut the tops to within two inches of the crown and store in a dry room where the temperature does not fall below forty degrees. From North Carolina southward, small sets will make flowering bulbs in one season. At the North two years are required. For blooming in the garden the sets should be carefully taken off, and the bulbs put away until the wounds have dried over; then plant in good, rich soil, placing the bulb just below the surface; if covered too deeply they are not as likely to flower.

DOUBLE TUBEROSE SPIKE.

GLOXINIAS.

S. M. PARK, NEW YORK.

Nearly all the species which compose the genus Gloxinia are natives of South America; and, although brought into cultivation one hundred and fifty years ago, these beautiful plants are seldom seen in gardens, save in those of a few amateurs who appreciate their beauty, and have mastered their cultivation. If their merits could be brought to the notice of the general public they would be appreciated and grown oftener than they are now. The plants are objects of beauty—the broad thick velvety foliage, produced in abundance, makes an ornate setting for the gorgeous flowers. The original species were something to be admired, but through the hybridizers' work the small drooping flowers have given place to forms with the corolla regular and nearly erect, the latter habit presenting the border and throat of the corolla directly to the eye. The hybrids are also improved in color. Well-grown plants will produce thirty to forty flowers during the growing season, four to six of them being open at one time. They are borne on stems about six inches long, the bell-shaped corolla opening out with lobed edges displaying the most gorgeous coloring in the throat, or often the exquisite shades of color arise in the throat and deepen in intensity toward the limb of the corolla, where it not rarely becomes dazzling. Often the color is disposed in minute specks well defined on the white ground.



HYBRID GLOXINIAS.

Gloxinias may be grown from seeds, from leaf cuttings, or from cuttings of the short stems. Cuttings can be struck and grown in the same way as other soft wooded plants. For leaf cuttings only mature leaves should be used. Insert the stem slanting in the sand so the leaf may be bent to lie flat on the sand, or held down by pegs. They should be gashed crosswise so that the gash comes across the base of the veins. Keep the sand moist and shaded, and in a warm temperature, giving air regularly. They may be grown in a hotbed, or, in more limited operations, in a box with panes of glass. In a few weeks young plants will appear at the base of the leaf-stalk and at the incisions made in the leaf. When large enough pot off and keep shaded from direct sunlight, but keep the shades well above the plants that they may get plenty of air. These plants will develop small bulbs in about six months. In the fall, water should gradually be withheld until the foliage dries, when the bulbs may be set aside in the dry soil until spring.

To grow plants from seed, this should be sown in rather sandy soil, very shallow, and kept constantly moist and warm until it germinates. When the plants are large enough to handle they should be pricked out singly an inch apart in boxes two inches deep, and kept moist and shaded. They are large enough before they put out the third or true leaf. Use a notched toothpick to handle them with. Unless they are pricked out very young they will damp off in the seed box. In the later stages of growth care should be taken not to wet the foliage, or allow the earth to get sodden. Either will cause them to damp or rot off. They require a medium temperature and shade from the sun. By fall these seedlings will have formed bulbs, which may be dried off in the usual way. Two or three year old bulbs are better for flowering

than old bulbs. For flowering they may be grown in a greenhouse or in the garden, if in a shaded place. The best way to grow them is in cold-frames in a rich compost. Plant the bulbs six to eight inches apart each way, half an inch deep. The frames should be covered with sash and whitewashed to keep out the sun. If the shade of a building is convenient it will be only necessary to tilt the sashes on the side opposite from which the sun strikes them in the morning or afternoon, as the case may be. By tilting them on the side instead of the end a more uniform ventilation is secured. If no sun or rain reaches them and not too much water is applied, flowers of enormous size and in great abundance can be produced. When frost kills the foliage the tops may be cut off the bulbs lifted and spread in a dry place of about 60° temperature until the roots dry out, when they may be cleaned off. The bulbs should then be placed in layers, upper side up in dry soil and kept in a temperature of 40° to 50°. A higher temperature will induce growth, while a lower degree will cause decay. When growth commences they may be planted again in a compost of sods, horse manure and leaf mold, or in any rich soil.

DWARF CANNAS.

In few genera of plants has the hybridizer's art produced so complete a change in the character and appearance of the original types as in the cannas. While formerly these plants were employed

CANNA, STAR OF 1891.

for the effect of their foliage exclusively, the so-called dwarf French cannas are rapidly superseding the older types. Their dwarf habit, handsome flowers, and the freedom with which they are produced are making them great favorites not only in the garden but also for conservatory and greenhouse culture. In color the flowers are rich crimson and bright yellow, with all the variations these colors are capable of. Our American floriculturists, however, have not been slow in improving the good work initiated by the French. By judicious crossing they have already produced some of the most beautiful as well as most dwarfed varieties in existence. The most remarkable of these, the "Star of 1891," is presented in our illustration, engraved after a specimen received from the introducer, Mr. John Lewis Childs, of Long Island. The entire height of the plant does not exceed eighteen inches. The flowers are bright orange crimson, and so closely arranged on the spike that the general appearance is more like a cluster of rhododendron than that of old style cannas. A bed of these, conspicuously planted in a lawn, must produce a really gorgeous effect.

TUBEROUS BEGONIAS.

E. S. MILLER, LONG ISLAND, NEW YORK.

Comparatively few persons who cultivate flowers are acquainted with tuberous begonias; a still smaller number know their merits and the ease with which they may be grown. If they were better known they would be sure to grace the borders of many more gardens than they do now, for they never fail to elicit praise from every beholder. As the name implies, their roots are tuberous, and may be dried off during their season of rest, which is in the winter. They may be gradually dried off after flowering. When the stems have nearly dried, they may be cut to within half an inch of the bulb: the soil should then be shaken out, the bulbs spread in a warm, shady place until the roots are dry, when they may be removed and the bulbs packed, right side up, in dry soil.

In March or April they may be planted in pots in the green-

SINGLE AND DOUBLE TUBEROUS BEGONIAS.

house, in May in cold-frames, or in the open ground in May or June. If grown in the greenhouse, the pots should be one-half inch larger than the bulbs. Keep the pots in a warm and rather dark place until they make some root-growth before the top grows. Keep the soil moist, but not water-soaked. Gradually inure them to the light, in a temperature of 60°. As the plants grow and the pots fill with roots, they may be shifted into larger pots as often as needed until they commence flowering, when they should remain undisturbed. Begonias do not thrive if kept too dry, neither will they bear too much wet. Too much moisture — particularly in

cloudy weather—will cause them to damp off at the surface of the ground, which destroys the bulbs. If to be grown in frames, a rich soil is requisite to success. That made from sods and manure composted a year is most suitable, and in it they will thrive and well repay the outlay. Plant the bulbs eight inches apart, just covering the crowns. Cover the frames with sashes, tilting them up on one side from two to three inches, giving them a thin coat of whitewash to keep off the direct rays of the sun. Water when needed, which will be about once a week. For growing outside, a soil like that recommended for frames is best, but in the absence of this a good border soil will answer if a heavy coat of well-rotted manure is spaded in. Plant in the same manner as in frames. Begonias grown in the greenhouse are more liable to be attacked by insects, and, from a lack of good ventilation, are apt to damp off. Grown outside, the plants are more sturdy, with short petioles and peduncles. The flowers are smaller, but of good substance. From being exposed they are often injured by excessive rains, while, on the contrary, continued dry weather and hot sun will burn them. In frames they grow more luxuriantly, producing larger flowers, with longer petioles and peduncles, and more flowers are produced, which last longer than those grown outside, or in the greenhouse. A frame of begonias, when well grown and full of bloom, is a grand sight.

These beautiful plants are also easily grown from seed, and any one having the inclination may derive much pleasure from growing a few seedlings. The seed is extremely small and requires fine soil, and should be barely covered, in shallow boxes about two inches deep. Keep under shaded glass, giving air, and never allow the soil to become dry. The seed will germinate in about two weeks. When the plants get large enough to handle they should be pricked out in similar shallow boxes, where they may remain until they have grown to about one inch in diameter, when they may be potted singly in two-inch pots, and shifted into larger pots as they require until fall, when a tuber will have formed, which may be dried off and kept in the same manner as old tubers.

Flowers grow from three to five inches in diameter, and of various shades of white, yellow, red, scarlet, and crimson. Some of the single kinds are marvels for size and gorgeous colors. The double flowers are more regular than the single ones, and in appearance are much like a camellia, but they do not grow to as large a size as the single ones. The stems are usually too weak to support the weight of the flowers, and they drop in among the leaves, so that double-flowering varieties are not as showy as single ones, though they are very popular at present. Those who love beautiful flowers should not fail to try a few tuberous begonias if they have never grown any before.

PROTECTION OF FLOWER BEDS FROM POULTRY.

ROBERT L. DEAN, OHIO.

This has been a difficult problem for many housewives to solve since poultry have unlimited range on most farms. To find a pretty flower bed ruined by one or more inveterate scratchers is most trying. But the chickens must not be penned up, for that would involve expense and labor. We do not want to fence off the flowers, for that would spoil half their beauty. The following has proved effective: The flowers in the lawn where they could be readily seen were inclosed by fine wire netting eighteen inches high. This was a real protection, but the netting was at least unsightly. Realizing that it was the soil and not the plants that needed guarding, some wide netting with small meshes was procured and fastened upon the surface of the flower bed after it was prepared and the seed sown. For potted plants the wires were cut to allow the stems to be slipped through, and were replaced. This device effectually prevented depredation by the fowls, while its only disadvantage was that it made cultivation a little more tedious.

CULTIVATION OF HUCKLEBERRIES.

EDMUND HERSEY, MASSACHUSETTS.

There are very few, if any, sorts of huckleberries that take kindly to cultivation without protection from the sun. When growing in the natural state the bushes not only shade the surface of the ground but cover it with leaves sufficient to prevent the soil around the roots from heating. To set single plants in the garden and keep the soil well cultivated produces an unnatural state, and thus prevents a rapid growth. But if the plants are set quite close together and the tops cut off to within three inches of the ground, and then the ground is heavily mulched, a growth of from one to two feet will be secured the first year. I do not remember that I have ever lost a single plant when treated in this manner, although I have often transplanted the high-bush swamp blueberry on high, sandy land.

THE CAULIFLOWER.

G. A. WOOLSON, VERMONT.

Cauliflower ranks high among edible plants, and it seems a pity that such a delicious vegetable should be so rarely seen in the farmer's garden. This is owing partly to a lack of appreciation by those who profess to be "master fond of cabbage," and who object to a more delicately flavored article in any way resembling it. But cauliflower is really more healthful, requiring less time for digestion; a point worth considering in these days of dyspeptics; another reason is doubtless the mistaken idea that cauliflowers are somewhat difficult of growth, whereas they can be grown successfully with no more trouble than an ordinary cabbage.

If desired early, seeds must be sown in the hotbed, the plants hardened off as soon as practicable, in order that they may be set in the ground in May or June to insure good heads in July and August. No matter how tall the plants have grown, the stalks must be placed in the ground up to the seed leaves; this is the only way to gain thrifty, thickset plants, and prevent lop-sidedness. This rule holds good for most seedlings.

The same worms infest the cauliflower that flourish on the cabbage, and the same exterminators answer for both. A single puff over the heart of a plant with a bellows filled with almost any of the marketable powders designed for such uses often serves as the "ounce of prevention," although eternal vigilance is the price of almost everything in the garden at the present time. All such plants must be looked after at the end of a rain storm, for the cabbage worm luxuriates in damp weather. If the plants turn pale or yellow a white maggot is at the roots, and the plant should be pulled up at once; if the havoc made in the root-stalk is not serious, the intruder can easily be found and killed, and the plant reset.

The practice of tying up the heads for blanching is advantageous in several ways; it prevents too rapid maturing and discoloration from sunburn, which is apt to be the case if the weather is extremely hot; it also adds tenderness, and preserves the beautiful snow white appearance of the curd, thus enhancing its market value. Fresh cauliflowers may be had from July until December if one cares to take the trouble. Plants may be transplanted into an exhausted hotbed or cold-frame easily in the fall, the windows used as the nights grow cold, and through the day if the weather requires, with an extra mat at night. Plants that are well started are sure to head although the weather may be cold and cloudy.

A PLEASING BIT OF GREENERY.

EVA GAILLARD, PENNSYLVANIA.

Those who want something refreshing to look at during the hot summer days should go to the woods and dig up some ferns just as they are starting through the ground, taking care to disturb them as little as possible. Also get some of the soil in which they were growing, and some moss. When you get home, take a platter, spread on some of the soil and place the fern roots on it, then fill in all spaces with the soil and cover with moss. When the ferns come up they look as if growing out of the moss, just as they do in the woods. Keep them where the light is not too strong, and sprinkle often. One who has never tried this has no idea how delightfully cool and pleasing they make a room look.

There is no plant the foliage of which is in so many places the most apppropriate object for decorating purposes. The reason for using platters or earthenware plates of some kind to grow them on is that then they can be placed on any piece of furniture without danger of the dampness penetrating through and doing harm. On fancy stands to decorate some empty looking corner, on the table, in the guest chamber, or in any nook or corner, wherever they may be placed, they make an attractive addition to any room. What could be a more welcome offering to a sick friend than a plate of gracefully growing ferns, that would seem to bring a piece of "the woods" right into the dreary monotony of the sick room, and which with a little care lasts for weeks, growing more beautiful every day? But it is with ferns as with many other things which are not appreciated by those who can obtain them easily.

Bountiful Feeding.—It pays to feed crops bountifully. The extra yield from the extra supply of plant food is largely clear profit. A considerable part of this extra supply of plant food can be obtained by frequent and thorough cultivation.

THE STRAWBERRY GUAVA.

C. R. ORCUTT.

The Cattley Guava (*Pisidium Cattleyi*), better known as the strawberry guava, is rapidly gaining in popular favor throughout Florida and Northern California, and has been highly recommended for cultivation in Arizona and New Mexico. It is unquestionably the most desirable and useful of the many varieties of fruits known under the name of guava. It is a shrub or small tree that adapts itself to a dwarfish habit when grown in the house in cold climates,

FIG. 1. BEARING GUAVA BRANCH.

but in a congenial clime attains a maximum growth of fifteen to twenty feet in height, of compact form, and with dense, glossy evergreen foliage, which makes it a very ornamental tree, especially when loaded with its rich colored fruit.

It produces early, bearing fruit when less than a year old, and producing in abundance at two and three years. Every branch will be heavily loaded with the luscious ripe fruit, green fruit in various stages of growth, together with ever present clusters of fragrant flowers. The thick, dark green leaves protect the fruit partially from the sun, but at a temperature of 140° F. there is a tendency to burn. It is called hardy in England, but requires protection in the Northern United States, where it is gaining in favor as an ornamental greenhouse plant. The fruit is of a dark red or purplish ruby red color in the common variety, but a highly valued form as yet rare in cultivation has fruit of a delicate shade of yellow. The red variety will probably always be first choice with growers, however. It varies from one to two inches in diameter, is of firm texture, capable of bearing transportation well, and always meets with a ready sale, either for table use in its fresh state, or for the manufacture of delicately flavored jelly.

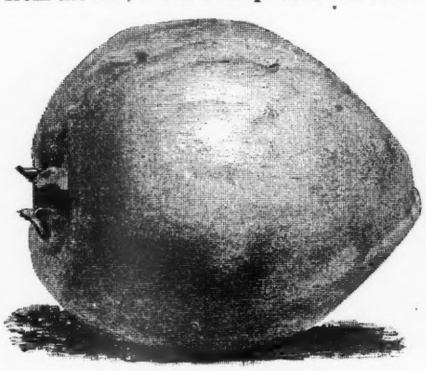


FIG. 2. GUAVA FRUIT.

It can be made to produce its fruit the year round. It is a naturally heavy bearer, and the fruit may be found in the market for fully six months out of the twelve. When loaded with its tempting fruit thickly set among its glossy dark green leaves it forms a striking and beautiful object, especially if pot grown and dwarfed in habit; but to be fully appreciated it should be seen as planted out in orchards and groves in sub-tropical regions where soil and other conditions are favorable.

[The accompanying illustrations furnish exact representations of specimens grown by Rev. Lyman Phelps, Sanford, Fla., through whose efforts the great value of the guava for our sub-tropical peninsula is rapidly becoming recognized. In Fig. 1 is seen a bearing branch, showing how the fruit grows in pairs, and at the intersection of each pair of leaves. Fig. 2 represents the ripe fruit, reduced to two-thirds of its actual size. Fig. 3 shows a cross-section; and Fig. 4 gives an excellent idea of the habit and appearance of the guava bush.]

A BEAUTIFUL SHRUB—(*Hydrangea paniculata grandiflora*).

Much praise has been accorded this shrub, but its value has never been overestimated. It is the most popular shrub in American gardens to-day, yet its merits are unknown to many persons, who if they knew its beauty and the ease with which it can be grown would surely possess it. It requires a deep, rich soil, to develop its panicles of bloom in perfection. As it is often seen growing in poor soil and sometimes choked with grass, and not pruned, it rewards its owner by bearing many small panicles of bloom from three to six inches long. Give it good, rich soil and prune severely, and panicles eight to fifteen inches long, though less in number, will be the result. On old plants not less than half of the previous year's growth should be cut away entirely and the remainder cut back to one bud. There being three buds to each node, enough buds will be left to produce all the wood the plants can nourish and perfect such a wealth of growth and bloom. The plants after pruning will not be over twelve inches high. Pruned in this manner every year, and fed liberally, no other flowering shrub excels this Hydrangea in beauty.

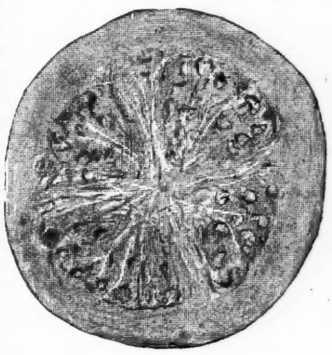


FIG. 3. CROSS SECTION.

Easy Way to Rid Ground of Weeds. — Do you want a garden patch that is rich and also free from the myriad weeds that infest your old garden? Change the hen yard to a new site and use the

FIG. 4. GUAVA BUSH.

ground where it stood. Repeated plowing and spading, as well as poultry scratching, has given the seeds all soils contain a good chance to sprout, and each in turn has been killed by the industrious birds. Also a weed-cursed garden should be penned in for biddy.

HOUSEHOLD

Our Experience With Ducks.

ALICE E. PINNEY.

Not many years ago Joe and I tried our hand at raising ducks. Joe said he had been told that they were easy to raise, and they always brought a good price in market. The butcher told him that he would agree to buy all we could raise, as the demand for ducks was always greater than the supply. He wondered farmers didn't raise more ducks if they wanted something that would sell at a good price. There was money for some enterprising farmer in ducks.

Well, Joe and I wondered, too, and as we wanted money we thought we would try our luck. So that fall Joe came home one day with two ducks and a drake as a start in duck-raising. They were nice ones, and beauties too. Their white feathers glistened in the sunlight, and they would go into a muddy ditch of water and come out flapping their wings, white as snow. It was a pleasure to see them waddle about in a rainy day. Joe said they were worth having as a source of entertainment on rainy days.

Toward spring we began to save the eggs for setting, and by the 1st of June we had as fine a lot of ducklings as one would wish to see, numbering about thirty. As there was no running brook near the house, we used to fill two or three shallow dishes with water, and it was sport to see those little downy ducklings jump into the dish and float. They actually seemed "light as air" when in the water; and if the wind blew they would blow about like so many cotton balls. But by the month of August, when those thirty ducks were feathered out and growing finely, I began to have some doubts about the comfort they gave me. The back dooryard looked as if a swarm of grasshoppers had passed over it. The grass was literally gnawed down into the turf, and I wondered sometimes if the roots were not entirely destroyed too. There was nothing either high or low which appeared to be safe from those terrible ducks. As for keeping thirty-three ducks shut up it was out of the question. I believe they would have eaten up the henyard, fence and all.

By Thanksgiving time they were in good condition for market, and Joe came home from the city one day saying that he had engaged sixteen of them at the Central market to be delivered the day after to-morrow. He further went on to say that he should not carry any such birds as he saw hanging in the market that day. The outside skin was rubbed off in a number of places, and they didn't appear to be dressed off nicely either. That marketman should find that our ducks would dress better than those.

In the course of the day one of our neighbors came in to call, and Joe told him of the ducks and of our work in prospect for the morrow. He informed us that we had no small job before us to dress sixteen ducks. He had once raised ducks, and if we desired he would come over and help us, and perhaps he could show us how. (He used to live in the city, and if there is any one who knows all about farming it is one of those city men who never saw a farm until within a few years.)

As soon as I had my breakfast dishes out of the way Joe put on the washboiler of water, and by the time the water was hot our friend came in. He said he "wouldn't miss the fun for a good deal." He told us that the best way was to dip the ducks in the boiler, scalding them enough to bring off the first coat of feathers, then roll each duck in a thick towel and let it steam a few moments, and the down or second coat of feathers would come off tolerably easy. We followed his directions and in a little while my kitchen might have been taken for one of those buildings in the ancient city of Thebes where they prepared mummies for burial. The table, and draining-board, and sink were covered with small objects rolled up in towels of all sizes, waiting to steam sufficiently to make the down come off easily. At last we had the ducks ready for the second plucking. We toiled with sweating brow and weary hands, and yet the end of our labors appeared to be afar off. Down flew in every direction, and still those sixteen ducks appeared to be as downy as when we began. Joe grew desperate, and dipped his duck into the scalding water again; at last he cried, "Eureka!" but then he cried a moment after, "Misery! the skin is all coming off with the down. This will be a pretty looking bird to carry to market." Dinner time came and passed; but we were too busy to stop to eat, and the prospect for dinner was so meager that I finally brought out a pie and some raised doughnuts, and told the men to help themselves.

We worked bravely through the afternoon, and at last, as it was growing dark, we concluded that we had done our best for those ducks. They didn't look as well as we, or at least Joe, had expected, but our fellow-worker said that he called them a pretty fair lot, and he thought the butcher would not find any fault. We put them in a cool place for the night, and didn't look at them again until the next morning. Then we made our preparations for packing them ready to carry to market. Joe went in ahead, as I was busy for a moment, but he called to me directly, "Maria, these ducks are not half plucked, or else the feathers have grown during the night. I never can carry them to market in this state."

Surely enough there did seem to be a full coat of down on them now that they were thoroughly dry, but after working on them an hour or two Joe said he believed they were downy all the way through. He presumed half an inch of fuzz would grow on them on the way to market anyway, so he might as well start.

That night when he came home I asked him how they were received at the market. He seemed a little reluctant to tell, but said the dealers didn't find very much fault. They only said they didn't understand why people could not dress ducks off as nicely as they did other poultry, and that they had about made up their minds to buy ducks by live weight after this. "I told them I wished they would," said Joe, "and I closed a bargain with them for the remainder of the ducks, only reserving two for our own eating. I suppose we shall have to make a dinner for Uncle Eben's folks, and Sarah, and John, seeing we have the same as invited them already."

"Why, Joe," said I, "aren't you going to keep any of them over for another year?"

"No, I'm not," answered Joe. "If there is any money to be made in ducks some one else is welcome to it; and they'll earn it if they have to get them ready for market. As for those two for the dinner, I reckon we'll have to eat some feathers, but perhaps they won't be noticed after they're cooked."

I told Joe that I was going to try a new way if he was willing. We did not scald them at all; just pulled off the feathers and fuzz dry. It was a long job, even then, but not quite as disagreeable as to have them dripping wet and steamy. We concluded that that city fellow didn't know everything about ducks yet, for our two ducks looked much better than the others when dressed, while no one said anything about feathers if they found any at the dinner next day.

Joe and I have had our experience with raising ducks, and we are satisfied. Joe says he'll never raise another duck, and if any one should offer to give him one he wouldn't take it. We smile now when we read of the money to be made in ducks; but all the advice I have to give is this: If you have to dress a duck, pluck it dry; and always sell them live weight, though the marketmen, or rather the boys, have my sympathy.

A Sponge Case.

MARTHA CLARK RANKIN.

So many people like to carry their own sponge with them when traveling, greatly prefering it to a wash-cloth, that a sponge case is a very useful and acceptable gift. A very pretty one is made as follows: Use a piece of oiled silk, eighteen inches long and nine inches wide. Double it so as to form a bag with open ends, and paint on one side a little design of daisies and fine grasses, a glimpse of the sea, or whatever else your individual taste may suggest. Next take a piece of pretty colored surah or China silk, ten inches wide and eight deep, and sew one ten inch edge to the top of one side of the oiled silk bag. Double the silk, and sew the other ten inch edge to the top of the other side of the oiled silk. Then stitch across on each side just above the joining, so as to make a place in which a ribbon may be run. With these ribbons the top is drawn up a little, and a pretty bow tied; or they may be used simply for hanging up the case.

How to Become a Trained Nurse.

ELIZABETH ROBINSON SCOVIL.

Many women are attracted to the profession of nursing because it offers honorable employment and immediate remuneration. There seems to be no fear of the market becoming overstocked with this particular kind of labor. As long as sickness and death are factors in existence, so long nurses will be in demand to care for the sick and dying. Although many graduate every year, the ranks are constantly being thinned by marriage or other duties, which call the nurse from the practice of her profession, and so room is made for the new candidates who come forward to take their places in the field.

Almost all the large hospitals and many of the smaller ones have training schools for nurses connected with them. The pupils live in the hospital, board and lodging is provided for them and their washing is done in the laundry attached to the institution. They do the nursing in the wards, and by this means gain the practical experience which is necessary to perfect them in their work. They are paid a sum which varies a little in different hospitals; usually it is ten dollars a month the first year, and fourteen dollars a month the second year.

An effort is being made to discontinue the system of payment for the services of the nurses on the ground that students in colleges are not paid while acquiring the knowledge for which they come, but are required to make payment for the privilege of receiving it. This would be a strong argument against the renumeration of pupil nurses if the cases were parallel, but they are not. The stay of a student at a college is purely voluntary. If at any time he finds the expense beyond his means he can retire. Not so with the nurse who signs an agreement to remain for two years, and cannot honorably withdraw from it at her own volition. A student is not required to repeat again and again for the benefit of the college exercises which he has already mastered, and are not therefore absolutely necessary to his advancement. A nurse must do work many times over with whose technical principles she is thoroughly familiar because it is required in the service of her patient. Hospitals undertake to nurse the sick. The nurses perform this office for them and should be paid for their assistance. Although the doing of it gives them a skill which in the future will enable them to earn their own living by its means, they should not be deprived in the present of the hire of which all industrious laborers are worthy. These facts should be taken into consideration by a woman who is about to choose a hospital as the scene of her labor.

To obtain the forms of application, which must be filled out in the applicant's own handwriting, a letter should be addressed to the superintendent of nurses and sent to the hospital selected; the return mail will bring the papers. These should be promptly returned and the sender will be notified within a short time whether she has been accepted or not. It is necessary for the candidate to have a good common school education. She should be able to spell correctly and write a legible hand. It will be to her advantage to know the tables of weights and measures. She should possess good judgment, a plentiful supply of common sense and a determination to do her duty faithfully. There is no virtue that a nurse cannot use! Patience, tact, truthfulness, discretion, unselfishness, neatness and quickness may be called the seven cardinal ones in her case. The training helps to develop all that is best and noblest in a woman's character and to eliminate petty motives and sordid aims. The sight of so much suffering, which it is her privilege to attempt to relieve, lifts her above her own little troubles and trifling ills.

It is common to imagine a hospital as a place where there is nothing to be heard but sighs and groans, and where long faces and serious looks are the rule. Any one who has lived in a hospital will testify that this is a very mistaken idea. Nowhere is there more quiet cheerfulness, and nurses are a happy, oftentimes a merry, set of beings. Jokes are relished and fun appreciated as much there as elsewhere. The satisfaction of

seeing patients improve from day to day is very great. When this is denied, there is the spectacle of suffering borne with a fortitude which is nothing less than heroic to make one feel ashamed of murmuring. There is the satisfaction of soothing the last days of those who without this tender ministry would have none to ease the pangs of dying.

Nursing involves many hard and distasteful duties, long hours, incessant watchfulness, weariness and labor. Any girl who undertakes it with a romantic idea that she has only to smooth pillows, and will in some way escape its disagreeable sights and sounds, will be disenchanted when she encounters the reality. It is no use for any one to embark in it who has not good health. A delicate nurse is worse than useless. She is a constant trial during her training, always breaking down and leaving her work to be done by some one else who has enough of her own. When she graduates, if she ever reaches that point, she is unfit to take care of patients who demand first of all that their nurse shall be physically able to attend to them.

After graduation a nurse receives from fifteen to twenty dollars a week for her services in private families. If she takes up institution work her salary ranges from twenty-five to thirty dollars a month as head nurse, and so, by varying gradations, to from eight hundred to twelve hundred dollars a year as a superintendent.

To those who have a liking for it, it is a happy life; chequered by trials and tribulations, as all lives are, but full of noble purposes and aspirations, and attaining, perhaps more than in most callings, a certain measure of achievement.

Natural Nests for Canary Birds.

RICHARD RIECK.

Many fanciers think that in the artificial raising of birds of different kinds all things should be artificial except the birds themselves. But I

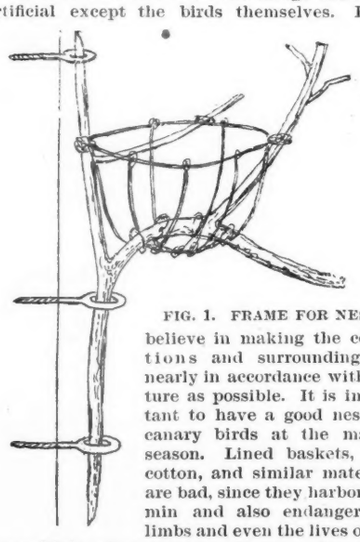


FIG. 1. FRAME FOR NEST.

believe in making the conditions and surroundings as nearly in accordance with nature as possible. It is important to have a good nest for canary birds at the mating season. Lined baskets, lint, cotton, and similar materials are bad, since they harbor vermin and also endanger the limbs and even the lives of the young birds when they are about to leave the nest, by entangling their feet and causing their legs to be broken in their frantic efforts to become free, and in some instances the young birds fall over the edge of the nest and hang there with their feet entangled hopelessly above. A perfect nest, whether for the fancier who breeds birds for sale or for those who merely raise their own singing birds, may be made as follows:

Cut a suitable twig from a bush or tree and fasten slender iron wire in the fork of it, so as to form a basket, as shown in Fig. 1. Then take a handful of hay, smooth it out, and cut it to eighteen or twenty-four inches long. With the hands, thumbs inside, turn this wisp to a shape resembling a bird nest, as seen in Fig. 2, and put it into the basket. The twig supporting this nest may now be placed in the aviary and held in place by three screw staples previously fastened into the wall, as seen in Fig. 1. Insert the stem of the twig into the two lower staples and then bend it a little outward, by which means the upper end may be inserted through the eye of the top staple from below, and will spring back into position firm and solid.

The birds may then be given some dry moss,—not artificially-colored,—with which they will build up the inside of the roughly-made nest and line it snugly with soft feathers. Feathers for this purpose should be provided for them, else the canary birds will pluck the needed material from their own bodies. Breast feathers of fowls are excellent and should be placed in a small-meshed net to prevent the birds from scattering them all over the place. To prevent them from picking too

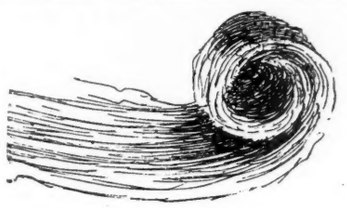


FIG. 2. LINING OF HAY.

much at the hay part of their nest, give them at all times plenty of the hay seed that drops from the hayloft. This will keep them busy and at the same time more healthy, because it is a natural food. The nest as completed, and viewed with satisfaction by the builders is presented in Fig. 3.

Wash Fabric Painting.

MRS. L. D. ELDER.

Some time ago I was doing some painting which required a special mixture to thin the paints in order to give the colors a gloss, in keeping with the material to which they were applied. I noticed afterward that washing, and even repeated boilings, failed to remove the colors from the cloths which I had used to clean my brushes upon; hence, I reasoned that if they could be so persistent when applied at random, might they not be equally so when intentionally and designedly applied? I could see no reason to doubt it, but to test the matter, and still prevent any great monetary loss in case of failure, I concluded to make a portiere for a small closet doorway which was constantly opened by small and often soiled hands, and besides was exposed to strong light, and morning sunshine as well.

The material chosen was strong unbleached muslin, and the design I used was of maple leaves in different sizes arranged with careful carelessness, as though being showered down from the parent tree by gentle autumn breezes. This design it will be perceived allowed of the use of a wide range of colors and shades in producing the autumn tints, and at the same time did not require the delicacy of coloring and shading so difficult to achieve by a novice, and on untried materials, The result was entirely satisfactory. Almost every

FIG. 3. NEST COMPLETED.

new visitor pays the compliment to my successful counterfeiting of furtively examining "those leaves, to see how I fastened them on," and some "wonder that the children do not get them torn off, running out and in so much," until the matter is explained to them. Of course it gets dirty often, but I wash it in strong, cool suds, iron it on the wrong side, and it is new again. This work is suitable for any style of wash goods, and is effectively used on aprons, tidies, stand and bureau covers, sash curtains, scarfs, lambrequins, and a host of other articles.

Tube oil paints are the colors used, thinned with a mixture of hard oil varnish and turpentine, so as to color the goods without concealing the weave, nor yet being thin enough to run in the fiber, a little experience being necessary to determine just the proper consistency. I find chrome greens and yellows, Indian red, vermilion, and Prussian blue good durable colors. Tone down with white when necessary, but the white paints stiffen the goods more than most others. Of other colors I cannot speak with certainty, not having given them sufficient trial as yet.

Pillow-Sham Holder.

M. CLAIRE.

Where to place the pillow shams at night is often a perplexing problem. Being of a slippery nature, they are very apt to glide from the chair-back on which you have so carefully arranged them, greeting your eyes in the the morning a tumbled, crumpled mass. The accompanying illustration of a little article which any one may make for a few cents will relieve housekeepers of this difficulty and save washing as well. Take a rod two inches longer than the width of the sham and cover it with a piece of dotted Swiss or scrim, slightly fulled on and edged with a fall of lace two inches deep. To do this, take a strip of the muslin one-fourth longer than the rod and wide enough to slip on easily when sewed in the form of a hem; sew the lace on this plain. Cover the rod first with a bit of muslin, red, blue, or old gold, according to the predominating color employed in the furnish-

ORNAMENTAL SHAM HOLDER.

ing of your room. Suspend with ribbon and place a ribbon bow at each corner. Screw in a little peg an inch long at the back on each end, to keep the rod out from the wall, in order to slip the shams over more easily. An old cane, the handle of an old broom, or a curtain pole can be used. If you take the latter it is very pretty without muslin or lace if enameled with ivory white Aspinwall paint. Screw on the ends the brass or wooden knobs belonging to it, and suspend with a silk cord or with picture wire.

Satisfying Thirst in Summer.

D. WEBB.

Those who are engaged in active exercise during the warm weather must, of necessity, drink more water than is needed in cold weather to make up the loss of fluids by the increased perspiration. This is entirely overdone, however, by many hard-working people. Drink after drink of cold water is taken into the stomach at frequent intervals until it is a wonder that this organ is able to even partially perform its functions. Every drink of cold water taken into the stomach during the process of digestion checks for awhile either partially or wholly the process, and deranges the functions of the stomach. It is undoubtedly true that the food which farmers eat in summer is not so well assimilated, and made available for the use of the body, as that taken in winter, because of this dilution of the digestive fluids and the shock of cold drinks upon the stomach. This is specially unfortunate because farmers need at this time of year, to carry on their severer labors, the strength and vigor which can only come from well digested food. Even those who declare that they must drink cold water when they feel thirsty ought to know that thirst can be satisfied with one-third of the drink usually taken if it be taken in the right way. Let the following experiment be tried: At a time when one feels as if he could drink two or more glasses of water in quick succession, and still perhaps feel hardly satisfied, take a single glass and slowly sip it. This requires some resolution to drink in this way when one is warm and very thirsty, but the result is worth the

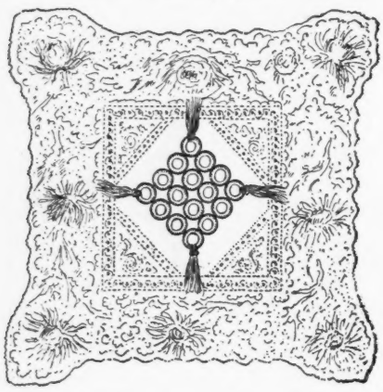
effort. Water can be drank so slowly that it will be almost impossible to drain a single glass, while that which has been taken will have been warmed to some extent before it reaches the stomach.

No one has a right to injure his digestive organs by excessive drinking of ice water, to the use of which much ill health and many serious diseases are due, while even cold well water should be used cautiously when one is greatly heated. It is unnecessary to admit that lukewarm water is an abomination to a thirsty man, but oatmeal porridge quite thin is very palatable, nutritious and satisfying, even when lukewarm. One's stomach will stand a great deal of unkind treatment without immediate complaints, though it remembers all unkindness, but it will not endure to serve as a hydrant during four or five months of the year. Moreover, in winter many go to the opposite extreme and do not drink enough to supply the necessary fluids of the system. The subject is one that is so closely related to health as to merit more thought than is commonly given to it.

A Pincushion Cover.

ANNIE H. DONNELL.

A dainty lace handkerchief having a square design for the center forms the foundation of this. Sixteen rings covered with silk form a square that is tacked diagonally to the handkerchief, the rings at each corner having a tassel of the same silk used in covering them. A plain white cushion, or one of some delicate shade, if preferred, should be



LACE COVER FOR PINCUSHION.

made of such size that when stuffed will allow the lace cover to hang down loosely over its sides so that the edges may touch the surface upon which it rests.

Pillows and Cushions.

KATHERINE B. JOHNSON.

In the whole range of so-called decorative needlework no articles are capable of combining more of beauty and utility than pillows and cushions. I do not refer to those made for ornament, not for use, but to the generous sized ones, which should be found in abundance during the summer months in the seats and on the backs of veranda chairs; in the hammock and stretcher; on the piazza floor, with enough in reserve to carry out on the lawn and sit upon under the trees. Most of these should be large—from eighteen to twenty-four inches—and very little time or money need be expended in making them. They can be filled with excelsior (which can be obtained of any upholsterer for a trifling sum), oat straw, or even hay. The covers should be of some durable, washable material, that they may be freely used, and not ruined if carelessly left out in the dew or even in a shower. Figured Turkey red, fancy striped ticking, blue denim, or cotton sateen are suitable. They can be embroidered in bold, effective designs, done in contrasting colors of linen floss, or they can be left plain and the edges piped with some other harmonious color. A box-shaped one of blue denim, turned on the wrong side, and having a two-inch wide puff of plain Turkey red around the sides, is easily made and effective. But, in whatever way they are covered, one end should be slightly fastened in order to allow of the cushion being removed for refilling.

Fancy striped ticking is very suitable and pretty for veranda chairs, and worsted dress braid is even preferable to ribbon for tying them to the chairs. A large, full one, twenty-four inches wide, with another of the same length but only ten inches wide, fastened together by four sets of braid ties, and used to lay down at the edge of piazza steps, with the narrow one hanging over, is a very comfortable article. If you feel that you cannot afford to buy two or three cheap, durable chairs for use on the piazza, go up in the attic and see if

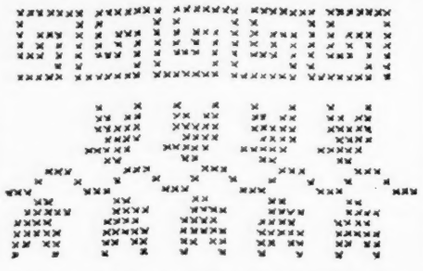


FIG. 1. GRECIAN DESIGN IN CROSS-STITCH.

there are no old discarded ones there that you can bring down and renovate into just the thing you need. First scrape them with a piece of glass, or subject them to a hot bath of washing soda or potash to effectually remove all the old finish and open the pores of the wood. Then repaint in some harmonious color, and cushion as described above. One will often go out on a piazza to sit down if an easy, inviting chair is there when he would not if he had to carry one out from indoors. Double cushions tied together, one to hang over the front and the other at the back, are the most convenient form in which to make them for c air-backs.

Try these homely comforts, you who are compelled to work hard and stay at home during the trying months of summer.

To Save the Stocking-Heels.

MARY STICKNEY.

The thick, heavy boots, particularly the gum boots, worn upon the farm are almost sure to cut the heels of socks. It is no uncommon thing to see the heels of a pair of socks put on for the first time Sunday morning cut from one side to the other long before Saturday night. When there are two or three boys besides the head of the family to darn for it is important that the wife and mother should save herself all unnecessary work, and she will find it a great help to have the heels protected by a covering of thin, soft leather, cut to fit the sock heels and sewn on with strong, coarse thread. Have two sets, so that the clean pair can be ready to put on before they are laid away in the drawer. It takes but a moment to rip off these coverings when the socks are put in the wash, and much less time to sew them on than it takes to darn the heels presentably.

Embroidering Ginghams.

The engravings show two designs for embroidering gingham or barred muslin, and help to make

FIG. 2. ANCHOR DESIGN.

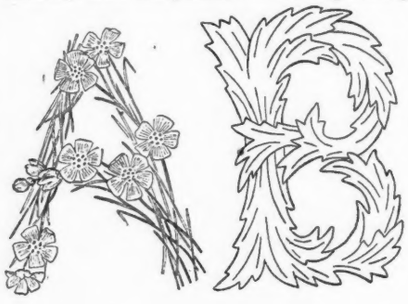
pretty and inexpensive dresses or aprons for little children. In selecting the material, be particular to choose small plaid with perfect squares. Blue or pink gingham embroidered with white working cotton, or white barred muslin embroidered with red floss make very pretty combinations. In both patterns allow for the hem, and in the Grecian pattern, seen in Fig. 1, begin twenty-four rows above the bottom of the hem, working the Grecian design at the top. The crosses in the illustration represent the blocks cross-stitched, and the vacant places the blocks shipped. In the anchor design seen in Fig. 2 begin thirty-eight rows from the bottom of the hem, and work from the top of the anchor down.

Initial Letter--Leaf-Scroll Design.

FRANCES H. PERRY.

Embroidered initials, though always liked, have never been more popular than at present. For bed and table linen there are many designs shown, but none of them are as large as those used for the purpose a few years ago. But if one desires a larger initial for marking fancy articles with heavy silk, floss, or wool, the model, or any other letter or design, may be enlarged to any size as follows:

Copy the design on paper, inclose it in four straight lines (a parallelogram), and rule it off with a pencil into small even squares; then, in the same proportion, draw another parallelogram large enough to inclose a letter of the desired size, mark it off into just as many squares as the first one, in each square lightly copy the portion of the letter inclosed in the corresponding square of the small parallelogram. Very little practice is required; one can hardly go wrong in so small a space. When the enlarged copy is drawn in every square go over the whole letter more heavily and smoothly with the pencil, and when perfect go



INITIALS FOR EMBROIDERY.

over it again with pen and ink, and afterward erase all of the pencil marks.

Designs may be decreased in size just as easily by reversing the operation just described.

June Jollity.

ALICE CHITTENDEN.

I hope for the sake of the little ones you will take at least one play-day in this bright, lovely month of June and try how enjoyable a picnic can be made. June is pre-eminently the month for picnics as well as for haying. The real heat and burden of the summer is yet to come, and one is not too worn out for enjoyment, the ground is never so free from dampness or the air so balmy and sweet. A picnic is a good occasion in which to initiate the daughters of the family into the mysteries of the culinary art. They will enjoy the cake baking when the results are to be devoted to such a cause. Still, cake is the least important item in the filling of the picnic basket. Excellent appetites are apt to be the order of the day, and there is nothing more satisfying than delicate sandwiches. Don't bake rolls or biscuit for these, but have a sufficiency of nice sweet homemade bread twenty-four hours old.

The less labor there is in getting ready for a picnic the more the parties concerned will enjoy themselves, and so if you can buy potted meats which come in great variety and in small tin cans you will save yourself a great deal of trouble. They come minced fine as all material for sandwiches should be. If not, with a little planning beforehand, you may still lighten your labors. A whole or half a ham boiled several days before your contemplated trip will serve for suppers and ham omelettes and leave you plenty to be minced for your sandwiches. Mince a quantity very finely, using a small proportion of the fat, then to each pound of the minced meat add a seasoning of cayenne, or black pepper, two tablespoonfuls of melted butter or table oil and two of any nice

catsup, tomato, walnut or mushroom. Work to a paste. Cut the end crust from your loaf, and with a broad-bladed knife spread it with butter just soft enough to spread evenly and thinly; with a sharp knife cut off a very thin, even slice and so proceed until you have finished the loaf. Then spread one slice with a thin layer of the prepared ham, lay another slice on top and cut in three or four sandwiches, according to the size of the loaf. A delicious mixture for sandwiches is made from canned salmon. Take out the bones, if any, and rub to a paste with lemon juice, pepper and butter or oil. Sardines are especially nice prepared in this way. A variety of sardines of native packing called "mustard sardines" are inexpensive and good.

All this may be made ready the night before. If you cannot buy waxed paper such as confectioners use, make it. Have ready a dozen or more sheets of white tissue paper, a little sweet oil and a brush; brush over a sheet with the brush lightly dipped in oil, lay two on top of it, brush the next with oil, and so on. Sandwiches wrapped in these will keep nice and fresh if placed in a cool place over night. If you have been in the habit of saving any nice paper boxes that may have come to hand you may even dispense with baskets, and the lighter the load, unless you ride to the scene of enjoyment, the better. Pack the cake and each variety of sandwich in a separate box. Bottles containing salad dressing and certain catsups which have screwed-on tops are nice for carrying lemon juice and sugar to be mixed with the cool, sparkling water from some clear mountain brook or spring near which you will doubtless camp.

Utilizing an Old Table-Cloth.

CLARISSA POTTER.

"'Burn it!'" No, indeed, children. Carry the roll into the attic. Sometime we shall see good uses we can make of that old oilcloth."

The "roll" was a three-yard strip of marbled oilcloth table covering that for four summers had done service on our dining-room table, its worn, dingy length now giving place to a gay new covering bright with varnish and red roses.

But it wasn't two weeks before we had need of a strip of white marbled cloth, and the old table-spread was remembered, brought down and utilized for this and that until not an inch strip remained. Our kitchen dressers were so suds-eaten and easily grimed they required vigorous scrubbing each week to keep them passably wholesome, a hard, disagreeable job that the girl and I alternately shirked on to each other. The old oilcloth was thoroughly washed, its stains removed by scouring with soda and then given two good coats of white varnish.

"Clean and white, aren't they, Mamma!" the children said, patting the shining, glassy surfaces of sink boards and kitchen table when they had been neatly covered with the rejuvenated cloth.

One bright idea wakes another, and this time it was the cream-pail shelf in the milk buttery. For a decade and a half of years we had labored to keep that shelf wholesome with fresh, smooth papers; but cream will spatter and cream pails will dribble and exasperatingly glue their bases, resulting, often, in torn, slovenly rumples and wads of soiled shelf papers. But didn't that smooth white width of the freshly-varnished old table-cover revolutionize that buttery shelf! The cream pails slip and glide along its glassy face as though they enjoyed their filling in such clean, shining quarters and spattering drops and trickling dribbles are as easily wiped as from glass.

Among other good things at our house we have a baby, a little woman of eighteen months, whose diet is still chiefly milk. To keep such a child's crib dry and cleanly requires much care. I have two trundle-bed quilts, soft and light, that I fold four double and place over her mattress, alternating the quilts each day while the other is drying and airing in the sun, if possible. A square of the discarded oilcloth spread under the folded quilt protects the mattress from possibility of dampness.

Several small pieces of the old table covering were yet left besides a little heap of narrow strips, edge trimmings, here and there, where the cloth had become ragged and creased with wear. The fourteen-inch parallelogram was just the thing to cover the lower floor of the sink commode, the short foot wide strip to lay on the sitting-room mantel, with margin running wall-ward, on which to place the box or vial with oily contents and so protect paint and wall hangings from their greasy ooze, and the spilling handful of inch-wide edgings made a capital fly flapper by cutting them into yard lengths and laying their centers across the smoothly-cut butt end of a broken goad-stick, securely fastening them in place by tacking a bit of leather across the middle of the strips.

But the left-overs, two little squares of oilcloth, thin and crackled with wear, I did think were worthless until the girl said, "Give them to me, mum, for a suds apron." Acting on her suggestions, I basted the two pieces together, hollowed the waist line, rounded the two lower corners, sewed strong tape strings to the upper ones and the little oilcloth apron was done, just the thing to protect a careless washer from splashing and drenching her clothes over the abdomen with washsuds.

The Downy Woodpecker.

ERNEST E. THOMPSON.

This busy bird (*Dryobates pubescens*) is found in all the wooded sections of North America. It is fond of the edges of clearings and burnt tracts where there is an abundance of dead, standing timber, but it also finds congenial surroundings in old plantations and orchards. In the latter it is commonly to be seen the whole year round, for it is not a migratory species, but lives winter and summer in the same region, often sleeping in the same hole the whole year round. It is an active, noisy bird, and may usually be heard uttering its "chuck" note, or tapping away at the bark in its search for insects, at all hours of the day, wherever

DOWNY WOODPECKER.

it takes up its abode. Its food consists exclusively of insects, and most of these it takes by digging them out of the bark and wood of the trees that are infested by them. Old orchard trees are particularly subject to the ravages of certain species of borer, and the industrious little bird having located the invisible, insidious enemy, by carefully listening, forthwith digs rapidly in and, before the borer has time to escape, he breaks into his retreat and drags it forth to instant execution. The numerous series of small holes that we so commonly see in the bark of old apple trees are the work of this bird, but they are never seen in any tree that is healthy and without borers, so that the prejudice that exists against them is wholly unjust.

An example of the marvelous certainty with which this woodpecker ascertains the exact whereabouts of a borer was related to me recently. The tree, a hardwood, was apparently quite solid but an investigation revealed the fact that a large grub had bored up from the ground through the pith of the tree, and was still carrying on its work of destruction when the keen ear of the woodpecker detected the presence of the destroyer, and after a long severe spell of digging he dragged it forth to daylight and death. Probably the bird would in this way have saved the tree, but the observer was so much struck by the incident that he sent the whole trunk to Washington, where now it is to be seen in the Department of Agriculture a permanent witness to the adroitness and usefulness of the bird.

Wilson, the celebrated ornithologist, after detailing the methodic habits of this woodpecker in seeking out and destroying the borers, and also emphasizing the fact that it never touches a sound tree, proceeds to say: "These woodpeckers are seen indefatigably engaged in orchards, probing every crack and crevice, boring through the bark,—and, what is worth remarking, chiefly on the south and southwest sides of the tree—for the eggs and larvæ deposited there by the countless swarms of summer insects. These if suffered to remain would prey upon the very vitals—if I may so express it—of the tree, and in the succeeding summer give birth to myriads more of their race, equally destructive, Here, then, is a whole species, I may say genus, of birds, which Providence seems to have formed for the protection of our fruit and forest trees from the ravages of vermin, which every day destroys millions of those noxious insects that would otherwise blast the hopes of the husbandman. They even promote the fertility of the tree, and, in return, are proscribed by those who ought to have been their protectors, and incitements and rewards held out for their destruction."

The Downy Woodpecker is about six and one-fourth inches in length. Its plumage is black and white in the female, and in the male similar but with a patch of bright red on the nape. It gets its name "downy" from the tufts of downy feathers that cover each nostril. The object of these is to keep out the dust caused by the work of excavating, but they are doubtless of equally great service as respirators during the cold weather. The straight, chisel-edged beak, the strong feet with the toes arranged two forward and two backward, and the stiff prop-like tail are all special developments to aid the bird in performing the labors by which it lives, and all testify to its peculiar fitness for its special mode of life. The Downy Woodpecker has a larger relative, the Hairy Woodpecker, which resembles it exactly excepting in size and in the color of the outer tail feathers which in the Downy are white spotted with black and in the Hairy pure white. Their habits are very similar. Both prey upon insects captured chiefly by boring, both nest in a hole dug out of a tree or stub, both lay about five eggs which are nearly round and pure white, and both should be studied and protected as friends of the farmer and protectors of his crops.

Flower Decorations for Indoors.

MARGARET KENNEDY.

Those who live in or near the country need not sigh for the costly decorations of city florists, for all about them are Dame Nature's flowers, and mosses, and vines to be had for the taking of them. Deft fingers, if they but try, can find in the fields and woods rich and—what is greatly desired nowadays—novel material for beautifying home and hall. There is such a variety, too, as "The rich gift of God, a year of time, goes by."

A church can be made very beautful early in spring with the white blossoms of the dogwood, wild plum, and haw. As large branches can be used, if all the arrangements are made beforehand the decorations can be put up a short time before the services begin, so that the flowers will be fresh. For many occasions nothing could be lovelier or sweeter than the pink blossoms of the wild crabapple. If flowers are scarce, there can be a canopy of green, with a motto made of flowers placed on it. Very effective would be a large cross of flowers on a background of laurel or cedar (made by tacking the branches on strong cloth or bagging with shoemaker's thread) within an arch of green. Walls can be gracefully festooned with laurel—ropes covered with laurel sprays.

As there is seldom room on the pulpits of to-day for even a bouquet, there should be provided a couple of small stands, of graceful pattern, for holding pot-plants or vases. A single plant in bloom will teach lessons as well as the sermon. One of the simplest ways of arranging wild flowers is to have a low box just the width of the pulpit, filled with sand or earth; in this stand flowers, arranging tall ones at the base and graduating them down to the box in front, which may be concealed with moss or vines. One can hardly imagine how pretty this simple arrangement can be made; wild roses, their pink petals contrasting with their green leaves; long branches of syringas, and the

purple plumes of the lilac if you wish cultivated flowers; golden-rod and ferns, or a royal blending of purple, and white, and gold—asters and golden rod. Verily "Solomon in all his glory was not arrayed like one of these."

It is much easier to decorate a private house than a church or hall, and it adds so much to the delight of guests that it is worth while even for a small party. Bouquets on tables and stands are pretty, but are soon "lost to sight" in a throng. Let most of the beautifying be where it can be admired. A mantle is easily converted into a bed of soft green moss, with violets or other flowers appearing to grow in it. The pictures can be artistically draped with wild vines. If the windows have long white curtains, though they be but cheesecloth, they can be made very beautiful. At the top of each put vines—wild buckwheat is the prettiest—tacking them lightly to the window frames, highest in the middle, drooping at the ends so as to form an arch. Below pin pressed ferns or sumac leaves to suit your fancy; if roses are plentiful they can be used instead.

Autumn decorations are royal in coloring if not so fragrant as those of spring. There are the delicate purple asters, the larger ones of rich dark purple, the brilliant cardinal flowers, the golden-rod, the ageratums, and many other white flowers; the maples and sumac will furnish you scarlet and gold in abundance, while the red berries of the dogwood are almost hidden by the maroon leaves. Arches of golden-rod for windows, doors, or to relieve a bare wall, are quickly made by tying the long stems together, gradually working the flowers downward. If you are so fortunate as to have a bay window it can be made a bower fit for Flora herself by ornamenting the windows with vines and ferns, and placing in the center an arch of flowers. Do not despair if there is no one to make the foundation arch. Two straight strips and a stout barrel hoop will do quite as well. Tie golden-rod thickly over the foundation, then put in other flowers here and there, according to the quantity to be had, such bright blossoms as zinnias being most effective at night. From the middle hang a basket of flowers. The feathery vines of the clematis, the bright berries of the bittersweet, waxberry, alder, and waahoo, pretty grasses, and bundles of golden wheat should be stored away for winter decorations, though nothing of course can equal the holly and mistletoe where they can be obtained. It seemed a happy thought, an arch made entirely of mistletoe under which a certain couple plighted their troth during the holidays.

Fashions for Little Folks.

Mothers, dress your children simply. This has been written again and again, yet it seems to require constant repetition when one sees the many little puppets who walk abroad in an excess of finery that is positively vulgar. Simplicity is childhood's greatest charm and Baby Boy—just out of slips—will look sweet as a rose tumbling about in a neat, useful frock of brown Holland or blue Chambéry, made with a high, round waist which is as wide at the waist-line as round the shoulders and has the little skirt gathered or plaited to its corded edge. The sleeves are coat-shaped and the neck is finished by a turned-over collar. For best, however, he must have a dress of ribbed piqué, the back of the waist being laid in narrow box plaits, while the fronts are gathered on the shoulders and at the belt, leaving an open V to be filled in with a shirt-front of embroidery, or finely tucked nainsook. Over this, on cool days, should be worn one of the small, dainty coats of white or blue cloth trimmed only with gilt bullet buttons, while a sailor cap completes the costume, set far back on the boyish head to show the thick bang in front.

Wee Girlee still clings to her pretty white guimpes and full bishop sleeves and over these wears the youthful gingham gowns that are printed in tiny checks or hair-lines of color. The half-low neck is cut either round or square and edged with a frill of scalloped cambric, as are the armholes. Around the waist is added a sash of white nainsook softly folded and tied behind in long loops and ends.

For older lassies, both cotton and wool dresses are often formed of two materials, a plain solid color being combined with plaided or striped goods, and no style is more becoming to immature figures than the "shirt-suit" as it is called. The shirt waist should be of the striped fabric, gathered on a drawing-string at the belt-line and thrust beneath the skirt. The top is a pointed yoke, neatly stitched above the fullness which is massed below the neck, while a turned-down collar edged by a ruffle of silk or embroidery finishes the neck; two rows of the same frill extending down the front. The sleeves are large and full to just below the elbow, where they are plaited into a deep, gauntlet cuff. Skirts consist only of two and a half or three straight breadths merely hemmed and attached to a belt, which may be covered with ribbon that ties in a long, hanging bow in front; or else worn with a girdle of the dress material stiffened with a lining of buckram; or a belt of tan-colored Suede kid. A silk and cashmere suit made after this design is pretty with a sleeveless jacket to slip on when going in the street. Girls in their teens like their plaid zephyrs made up on the bias, but it is said that these do not iron well.

For young folks' outing suits, come a variety of fabrics this season, some of the new flannelettes being ribbed in imitation of the fashionable Bedford cords; while there are cotton surahs which resemble the dainty wash silks and a host of others that divide favor with the standard prints and all-wool flannels.

For cool days in summer hundreds of natty little jackets are displayed in our city shops, the most elaborate of which are made in reefer style, with a deep sailor collar that is trimmed with metal galloon, some of the same appearing also on the reefer pockets, while frogs made to match fasten the square fronts. Less showy are the double-breasted coats of navy blue diagonal or striped cloth, with gilt or silver buttons and tiny anchors on the former and large horn buttons on the latter.

Very small maidens wear very large hats, with rolling, open-straw brims through which several rows of ribbon are run; the only other trimming being a cluster of ostrich tips to nod gaily in front. For those a little older chip *chapeaux* are liked and they are covered with flowers, the turned-up back (a feature of this summer's fashions) being held in place by many high loops of satin ribbon. The same style of decoration will also serve for the big Leghorns which are always more or less worn.

Friendly Insects.

MRS. A. E. C. MASKELL.

Some one remarked the other day that every butterfly, moth, beetle, and fly ought to be destroyed, as being the source of grub-worms and caterpillars. More than a hundred years ago a moth called the "brown-tail" was so plentiful in England that eighty bushels were gathered in one day. It would be well if people were educated to distinguish friends from foes, for really some of these winged and creeping things are man's friend and ought not to be destroyed. Only the other day a number of people stopped on the street to see a strange, bright-colored little fly, with what seemed to be a long sting buried in the trunk of a tree. Many were the inquiries as to what the insect was doing. Some said he was stinging the tree, but one man, more intelligent looking than the others, after carefully examining it said, "It is not a sting but her ovipositor. She is laying eggs in that tree to hatch out grub-worms. Kill her." And a little boy switched down the long-tailed insect and killed it. But if the gentleman had been a little more intelligent in natural history he would have known that the insect on the tree was an ichneumon, and that ichneumons do not bore holes into trees in which to deposit their eggs. That is done by the tremex or saw-fly, a different looking creature from the ichneumon fly altogether.

"Then what was she doing?" you ask.

Merely depositing her eggs in the bodies of the saw-fly's larvæ or borers that do such damage to trees. The ichneumon's larvæ are parasites growing and subsisting on the bodies of these destructive borers, so that you see an ichneumon fly is really a man's friend and not an enemy.

The lady-bird or lady-bug is a tiny beetle, and beetles are but the parents of grub-worms, which are so destructive to plants and wood. Yet the lady-bug, in her gay spotted, and her larvæ, in their Quaker gray dress, feast and feed upon aphides or plant lice, saving many a plant from destruction. So you see the lady-bug is man's friend, and some ladies, realizing this fact, have kept them as tiny pets among their plants in a sunny window all winter. I have done the same, and thus saved my plants from being destroyed by aphides.

Seasonable Dishes.

Lamb's Tongue with Brain Sauce.—Boil one or more tongues in salted water until tender. Tie the brains in a piece of muslin, after washing them and picking the fibers from them, with a teaspoonful of minced parsley to each pair of brains, and simmer in salted water for fifteen minutes. Drain, chop fine, season with pepper and salt, add a gill of cream and a teaspoonful of butter cut in bits and rolled in flour. Simmer for two minutes, skin the tongue, place on a hot dish and pour the brain sauce around it.

Braised Shoulder.—Have your butcher bone a shoulder of lamb, fill the opening with any kind of a forcemeat, sew up and braise slowly for two hours. Serve on a puree of spinach. As a regular braising pan is seldom found in ordinary kitchens, it may not be amiss to say that as good a result can be obtained by skewering a few slices of very thin and fat bacon over the meat to be cooked and then simmering slowly in a close covered saucepan, adding only enough water to keep from burning.

Boiled Tomatoes.—This is one of the nicest ways of serving this healthful fruit. Put enough water over the fire to cover the tomatoes you wish to boil, adding a tablespoonful of salt to each quart of water. When it reaches the boiling point drop in solid, not overripe tomatoes with the stem side down and cook until they are easily pierced with a sharp-tined fork. Lift them from the water, skin quickly, and sprinkle with sugar, pepper, and more plentifully with salt. Put a generous bit of butter on the top of each, and lay on small squares of buttered toast.

Broiled Shoulder of Lamb.—Many excellent dishes can be made from the cheaper parts of lamb. Take the shoulder, weighing two or three pounds, and cook slowly in water until tender; lift out and press between two plates until cold. Then score the flesh to the bones in inch squares and rub well with a powder made by mixing one teaspoonful each of salt and pepper and half a teaspoonful of mustard. Broil over a clear fire, but several inches above it, until hot through, place on a hot dish, dot with butter, add a few drops of lemon juice and serve.

How to Boil Asparagus.—It may seem unnecessary to give directions for so simple an operation, but it is rarely indeed that one sees a properly cooked dish of this delightful vegetable. It is generally placed in the pot horizontally, which overcooks the most delicate part, the head, and half cooks the stalk. Take pains to cut the stalks of equal length, tie in a firm bunch and stand upright in a deep saucepan, leaving nearly two inches of the heads out of water. The steam will cook the heads sufficiently while the hard, stalky parts, which may thus be cooked longer, will be rendered soft and succulent, and fully a third more will be eatable.

Breast of Lamb with Peas.—Remove the skin from a breast of lamb with most of the fat, and cut it into neat pieces. Dredge these with flour and put them into a stewpan with an ounce of fresh butter, letting them remain until lightly browned on both sides; add enough warm water to nearly cover, some sprigs of parsley tied in a bunch, and a small onion. Cook until the meat will only require about twenty minutes longer cooking; skim the fat from the surface, take out the parsley and onion, throw away the former and mince the latter, returning it to the pot with three cupfuls of shelled green peas. When the peas are tender place the meat on a hot dish, take out the peas with a perforated ladle, place them around the meat and send to the table with the gravy in a boat.

Asparagus Soup.—This is a cheap soup when one has an asparagus bed. Cut off the hard ends of two bunches of asparagus and boil the remainder until tender in salted boiling water first having cut off the tips to be boiled separately for an omelet or to garnish some dish; drain the asparagus when tender; put three tablespoonfuls of butter into a stewpan, add the asparagus, simmer for five minutes, dredge with three tablespoonfuls of flour and dilute with two quarts of chicken or veal broth and one of boiling milk. Simmer for ten minutes, season with salt, white pepper and nutmeg and press through a very fine sieve. Serve with small dice of dried bread. This soup is very good if milk alone is used. If a half pint of cream is added and a half cupful each of cooked green peas, string beans and asparagus tips it is called *purèe* of asparagus *printanière*.

The Prince of Rainbow-Land.

JULIA M. POTT.

One warm summer afternoon Ethel lay in a hammock under an old apple tree playing with a prism. Suddenly a low, rumbling sound in the far west caused her to sit up, and look in that direction. "There will be a shower," she thought, "but as it is at a distance I can lie here and watch it." Presently she saw the rain falling in slanting lines across the sky, while at times the lightning was so vivid she was obliged to cover her eyes.

But the storm was not to be a long one, and soon the clouds began to break, the sun shone forth again, and a beautiful double rainbow appeared before the delighted eyes of the little maid.

"Oh! how lovely!" she exclaimed, gazing at it wonderingly. "But it is fading slowly now!" and she continued to watch, till one by one the glowing colors paled in the sky. As the last faint streak disappeared, a small cloud seemed to float along the heavens and to come nearer and nearer, descending slowly, until to her great astonishment she saw it was a large bubble, clear as crystal, which soon alighted at her feet, while within it she saw a most peculiar little man. A thrill ran through Ethel as this strange being arose and stepping from his airy car approached her.

On his head he wore a red helmet, from which waved a plume of seven feathers, red, orange, green, yellow, blue, indigo, and violet. His short jacket was of red, with yellow trimmings; his trousers of orange, striped with blue, and fastened at the knees by huge rosettes of purple and green; his shoes of pale violet leather running into a sharp point at the toes, and tied at the ankles by silken strings. Courteously this little man doffed his helmet, and thus began the conversation.

"Dear child," he said, "I am the Prince of Rainbow-Land, and have come to ask your aid; for you are what I have long sought, namely, a maiden who owns a prism."

"Yes, I have one," said Ethel, surprised, and holding up the triangular piece of crystal which had fallen from her mamma's old-fashioned candelabra. "But how can I and this bit of glass help a prince like you?"

"I will tell you," replied the little man. "Although I rule in seven beautiful kingdoms of Skyland and have the fairest queen ever seen, I am very sorrowful; for our cruel master, the Sun, has snatched away from us our only son, Crystal."

"Why was that?" asked Ethel, sympathizingly.

"Because, after giving thousands of my choicest gems to be blended into old Sol's sunrises and sunsets, I ventured to suggest that he occasionally give me a chance to exhibit the beauties of my kingdom; for unless he deigns to illuminate my lands, my bow is never seen. His anger knew no bounds, and in his rage he carried off my princely boy and bound him in chains. I begged and pleaded, but this is the only answer he returned: 'Your son shall never be released until you can find an earth-born maiden who, with a prism in her hand, will be brave enough to encounter the dangers of the heavens and gaze steadily, without flinching, into my burning eyes. Then, and only then, shall Prince Crystal be free.' Little girl, will you dare all this for me? First you must visit my kingdom in order to receive the badge of admission to the Sun-King's palace. Then journey onward. Horrible monsters will meet you on the way, who will seek to frighten and destroy you, but fear not, one wave of your prism will overpower them by its brilliancy and make them cower in blind dismay. When all is accomplished you shall return safely to earth, provided your eyes are kept closed, during the ascent and descent."

"Yes, of course I will go," cried Ethel touched by the wee creature's grief and feeling as though she was in the midst of a fairy-story. "At once will I go, and test the powers of my little prism. If it will work such wonders as you say, why need I fear." And bandaging her eyes with her handkerchief, she stepped with the Prince into the bubble, which slowly began to rise as the tiny man crooned this magic spell.

"Crystalline bubble, I bid thee arise,
And slowly ascend in the bright summer skies;
Now over and under the cloudlets dip
Steer thy course rightly, O beautiful ship!
Carry us safely, I bid thee, to-day,
To the land of the Rainbow, far away."

The air was a sweet one, and Ethel sat listening, entranced, thinking "Oh, what a wonderful story I shall have to tell when I get home again!" The motion of the bubble made her at first a little faint and dizzy, but she soon became accustomed to it, and did not mind it so much, although she gave a sigh of relief when it presently came to a standstill.

"Welcome to Rainbow-Land," said the Prince, as he pulled off her bandage and helped her out of the strange carriage. Taking her by the hand, he led the bewildered girl to his seven-sided palace at the end of the arcade to which a royal staircase of polished glass led up; and the roof of which was supported by seven wonderful pillars, the first of rubies, the second, emeralds, and the third, sapphires; the fourth displaying the deep orange of the sardonyx, contrasting vividly with the fifth column of purple amethyst, the sixth of dull topaz and the seventh of pale blue turquoise.

"When the sun comes out after a shower," explained the Prince, "the reflection from these pillars causes the rainbow you so much admire. But here comes my wife to welcome you."

A sweet-faced princess clad in white and diamond-crowned received Ethel most cordially, and sitting beside her on a throne of fleecy clouds sent a servant to bring wine of rubies and cake of powdered pearls for her refreshment. Then after a short visit to the rich mines where she saw hundreds of dwarfs digging, cutting and polishing the precious stones she said she would start at once upon her perilous journey to the home of the powerful Sun-King.

The Prince looked sad but hopeful, and fastening the badge he had promised, a star, brilliant with seven sublime jewels, upon her breast, led her to the extreme verge of his possessions and, pointing to a white line in the sky, said "There is the road you first must take. I may not tell you more: but use your prism well,—and should you bring our darling back, we are your slaves forever." Half dismayed Ethel gazed at the pathway before her, which seemed naught but a bank of clouds. Would they bear her weight? She gathered up her courage, glanced at her prism and then made a desperate leap,—landing in a fluffy mass as soft as a feather bed, and apparently as substantial. "Ah! this is quite sport!" she cried aloud in her delight, and then went gently on, springing from cloud to cloud until night came on and the moon and the stars appeared in the heavens. Now, however, the cloud on which she was standing began to shrink, while there was no other very near. "What shall I do now?" she thought, and then, glancing at the prism read there engraved: "Swing yourself along from star to star"; which advice she tremblingly hastened to obey. Fortunately, the heav-

"DEAR CHILD, I AM THE PRINCE OF RAINBOW-LAND."

enly bodies were near together, but the points were sharp and her hands were badly lacerated. Suddenly, a low growl broke the stillness, and a huge black form with two glaring red eyes rose before her, making her feel sure she was in the quarters of the Great Bear.

"Dear Ursa Major," she said timidly, "please don't bite me for I am only a little girl going to see the Sun."

"Ha, ha! that is a likely story!" growled the Bear. "No mortal has ever ventured this way before. Let you pass, indeed! No, I shall devour you on the spot," and he made a wild plunge forward to treat her to a deadly embrace.

Ethel was badly frightened, but, freeing one hand, she shook her prism bravely in his face, when—startled by the flashing of this strange weapon, and bewildered by its many colors, the cowardly animal shrank back and hid himself from sight.

"Well!" thought the child, "my prism certainly helped me that time, and I will trust to it to conquer the other monsters of the sky." And resolutely she continued her journey.

A loud and furious roar next set her heart beating violently, and, looking before her, she saw Taurus, the Bull, with head bent down rushing madly upon her. "I will toss you on my horns!" "I will tear you to pieces!" he bellowed loudly. But she courageously awaited his approach, and then knocking her prism into its eye, the animal with a terrific cry of pain rushed up the other way.

"Oh! I hope I shall meet no more such creatures!" cried Ethel aloud, as she still swung onward from star to star, but, while stopping for a few moments at one of the constellations to rest her weary limbs, she suddenly felt herself surrounded by long and squirming claws, which seemed slowly but surely drawing her away from her grasp on the star. She made a desperate struggle, however, and managed to strike with her magic charm one of those terrible arms, when they all relaxed so suddenly that she nearly lost her balance, and was so frightened that she only clung stupidly for some time, gazing with horror at the giant Crab creeping away in the distance. When she again ventured onward, to her great delight the clouds began to brighten and flush in the east, the stars behind them faded, and the rounded, golden-hued castle of the Sun met her eyes.

Massive gates with red-hot bolts and bars prevented her entrance, and the heat and the smoke arising from them were so stifling she could scarcely breathe. But as she touched the portals with her powerful weapon they slowly opened with a grating, hissing sound, growing less and less red, till finally they turned cold and black.

Rubbing her prism over her face, neck, arms and clothing she felt relieved to find a cooler air played around her, and so resolutely pushed forward.

Presently she observed a group of grotesque goblins engaged in a game of ninepins, using enormous balls of fire, which they rolled down an alley of glowing cinders. And now a sudden increase of light and heat made her aware she was in the presence of the King himself. He was reclining upon a bed of live coals, and on his head rested a pointed crown of flame. His eyes were like two diamonds, so wonderfully brilliant that the child was forced to look down that she might not meet their blinding radiance.

"Ha!" cried he, as he beheld her, "What creature ventures here? Speak, ere I scorch you to death?"

Bravely Ethel stepped forward, and pointed to the star upon her shoulder. "I come from the Rainbow Kingdom, sire," she said, "but I am a mortal child and here upon your own conditions to free an unfortunate prisoner. Where may he be?"

"There!" hissed the King burning with anger. "A very disagreeable fellow he has been, too, for he will not enjoy our climate, and grumbles all the time!"

"No wonder!" thought Ethel, as she looked at the poor fellow chained to a stake, his face pinched and drawn, his lips shriveled, and his skin scorched.

"But to be his deliverer," continued the Sun-King, "you must be able to gaze steadily into my eyes without shrinking or moving so much as an eyelid." And he laughed a taunting laugh which made Ethel tremble all over, while she hesitated considerably, for to look into those dazzling orbs would be blindness for ever. He saw her timidity and laughed again! This roused her at once, and raising her prism she held it before her eyes, and his, and found to her thankful surprise her simple piece of glass had so softened and changed his staring glare that she was only looking at a circle of beautiful colors.

"You have stood the test!" at last he said, sulkily. "Go, free the miserable wretch, and depart at once!"

Gladly Ethel sprang to the side of the poor victim, and his chains fell from him as she did so. "Come!" said he; "run! run for our lives! The King is repenting his act even now. See! he is leaving his throne! he will destroy us! Hurry! hurry!"

And away they both sped just in time to escape a huge fire ball, which the Sun Monarch in his rage had hurled after them.

Just on the outskirts of the Sun's kingdom, they found the bubble awaiting them. Most gladly they entered it, and were soon wafted safely to Rainbow-Land. Here all the good little people of the kingdom were assembled, to receive their beloved young Master Crystal and express their gratitude to Ethel. How they all crowded around to hear her adventures, while the Prince and Princess thanked her again and again with tears in their brilliant eyes, and offerings of richest gems in their hands.

But Ethel was tired and longed to return to her own home, so soon bade her Rainbow folk "farewell," and started on her downward way, the Prince calling after her "Be sure and keep your eyes tight shut until the earth is reached," and then, beginning the sweet low chant that caused the bubble to descend.

"Bubble of beauty down you must go,
To the noise and the life of the world below,
Take thou this maiden, so gentle and fair,
Carry her safe through the soft summer air,
Perils for us she has borne to-day,
And grateful affection she carries away.
Sweetly the tinkling of each fairy bell,
Will chime in the distance our loving farewell."

Now Ethel fully intended to obey the Prince's injunction, and not even take one peep to see where she was going, but having neglected to bandage her eyes she, lulled by her pleasant thoughts, forgot what she had been told, and all at onee the brown orbs involuntarily flashed open. She caught a glimpse of blue above and green below, and then, with a loud report the bubble burst, and she found herself falling through space until suddenly her head struck the ground, she gave a wild scream and knew no more.

"Mercy, child, have you fallen out of the hammock!" cried Ethel's mother, running from the piazza to lift her little daughter, who was lying in the grass. But who looked up with a dazed smile to say, "Why, Mamma, the bubble burst and I dropped down from the sky."

"No wonder you think so dear, for you had a hard bump, and there is a lump on your forehead as large as a robin's egg."

"Is there? Well I do not care, since I have rescued Prince Crystal."

"Really, the child talks quite wild, she has been dreaming or else the blow must have affected her brain!" and greatly to Ethel's disgust she was obliged to lie on the sofa until tea-time, with ice bound about her head, while whenever she mentioned the wonderful adventures her mother looked worried and talked of sending for the doctor. So at length the little girl wisely concluded to keep her journey through the sky a secret to think over by herself, but whenever after she saw the bow of promise arching the azure heavens, she thought of the pillars of the seven-sided palace and the gallant little Prince of Rainbow-Land.

Alligator Hunting.

GEORGE A. MAIN.

One day last June, while we were living in Florida, my brother and I went to visit some young friends who lived about three miles away, on the bank of Deep River, a branch of the St. John, and connecting it with Crescent Lake. Our journey there on foot was through pine woods, across "Hammock Branch," a stream bordered by hardwood timber such as the palmetto, hickory, oak, and magnolia, and through an oak scrub where within a week two or three bears had been killed by one of our neighbors. There are several boys in the family, among them Bob and Henry, who are our particular friends. At night Bob, Henry, brother, and I went out on the river to hunt for alligators. The three largest boys took turn paddling the boat, trying to make the least possible noise, and either Bob or my brother kept in the forward part of the boat with a gun and having a hunting lantern strapped around his head; but all of us, of course, were watching for the alligators. In the night their eyes shine like live coals, and it is into their eyes that the hunter tries to shoot. We saw, or as they say there "shined," several; but at a little noise they quickly put their heads under water. My brother shot at three, hitting, as we suppose, two. One of these, rolling and flopping, splashed water into the boat, wetting us all over. Sometimes they throw themselves across a boat, swamping it, but we escaped that danger. Bob speared ours in the side, and the reptile nearly twisted the spear out of his hands. Finally he got away and went to the bottom. A few days later Bob's father found the alligator floating, and afterward told us that he was about eight feet long. This was my first experience in alligator hunting, and it was the most exciting fun I ever had.

A Knowing White Hare.

IRVING P. BISHOP.

The white hare of the Northern States lives in thickets on hillsides, or in swamps. It feeds by night upon grass, tender twigs, and the bark of trees. Unlike its cousin, the gray rabbit, it does not burrow in the ground, but sleeps during the day under the shelter of a bush or beside a stump, with its long ears pointed, one forward and the other backward, and its eyes wide open. For safety it depends chiefly upon its nimble heels, never taking to the ground unless wounded, and upon its ability to mislead its pursuer by doubling upon its track. Its coat also affords an additional protection, being made up of a mixture of brown and white fur. In summer the brown predominates, and, consequently, the hare is not easily distinguishable from the leaves and dry grass in which it usually sits. In winter the white fur is in excess of the brown, and so blends with the white of the snow that it requires a practiced eye to recognize the hare when sitting still.

Among biologists the hares and rabbits have a poor reputation for intelligence, owing to the comparatively simple structure of their brains; and naturalists, from observation, have pretty generally agreed that the reputation is well deserved. However, an old hare once gave me such an exhibition of her ability to plan and execute strategy that I have had a high respect for her and her family ever since.

While hunting one morning in Central New York, I came upon the track of a hare. A light snow had fallen in the early part of the previous night, and the fresh tracks were easily distinguishable from the earlier ones, which were partly filled with snow. The tracks led me in a circle of about three hundred yards diameter back nearly to the place where I had first found them. Here the hare had evidently stopped several times, as if to take observations, then had turned directly back for about fifty feet, stepping in the tracks she had just made. A long leap to one side at right angles to her former course was then taken; and, after going some distance, she had retraced this part way, made another long leap to one side, and was sitting under a thin pile of brush, so close to me that I could have touched her with my gun. To shoot under such circumstances would have been unsportsmanlike, and, therefore, I routed her out and allowed her to get some distance away before firing. Unluckily I merely wounded her, and she went on, dropping here and there a spot of blood by the way, and stopping just out of shot, only to move on at my approach. In this way I followed her about a circle to the point where I had roused her. Here she took to her previous track again, stepping in the old footsteps until the track was doubled for about half the distance. After passing through some low, thick hemlock bushes, which grew close to the trail on either side, I noticed that the tracks were much plainer, and, instead of being imposed upon the previous tracks, ran along beside them in the clean snow, so as to be easily seen. Then, as if to attract attention, the trail turned aside into the untracked snow, and led off away from the old track altogether, making longer leaps than I thought a wounded hare should. My suspicion being excited, I examined the tracks carefully, but could see no blood. Going back to

the hemlock thicket, I found that the wounded hare had there made a long leap to one side into the bushes, and, after going about two rods, had roused another hare. The latter had come out to the path, stepping in the wounded hare's tracks, and then had gone on in the direction the wounded hare had originally pursued. After getting well away from the thicket, the fresh hare had left her predecessor's tracks, and led away on a course which would not bring her pursuer back to the thicket again. To satisfy myself, I went back, and, going around the thicket, found the bloody trail emerging from the rear, the tracks close together, and showing evidence of increasing weakness. A few rods away it passed under a log, where, in a deserted woodchuck hole, poor bunny had found refuge.

From a careful examination of the above facts, the inference is almost certain that the wounded hare, finding her strength failing, had sought out another, of whose whereabouts she was cognizant, and had in some way communicated to the latter her perilous condition. The second hare had undertaken the neighborly office of drawing attention from her wounded friend, and, after covering up as far as possible all traces of the change, had taken the place of the other and made a most intelligent effort to distract attention from her. In this instance I was not sorry that she succeeded.

An Easy Way to Build a Sail Boat.

W. DONNELL.

I have made some sketches showing the various stages of construction, so that a boy and his tool-chest can build the boat with very little difficulty, if the human part of the combination will note the directions that follow. The tool-chest will be very certain to do its part.

The first thing is to make a model of such a boat as one wishes to build. From such a model one can get the proportional width and depth of sections at various points, as at *B C* and *D* (Fig. 1), one being at the widest part and the other two midway from the center to either end. These section forms are to be cut out of pine board in the proper size and shape as determined from the model. Those at *B C* and *D* are simply to serve as a mold over which to build the boat, but the end piece *A* is permanent, and should be cut out of plank. These section boards should then be placed in position and firmly held, temporarily, by strips tacked to the ends of the sections *X V* and *Z V* (Fig. 2), while one of the permanent strips, *m n*, is tacked to the bottom. The boat is now outlined in form, and the next step is to cover it with narrow pine strips, not more than two inches wide. The center strip having been securely fastened to the stern piece and to the upright post in the stem, which should be knee-shaped, as shown in Fig. 3. and tacked lightly to the section boards, the builder will proceed to fit a strip to either side of this, beveling the edges a trifle and tapering the strips a little toward the ends. These strips are nailed to the one already on in the center, where the keel will come, by driving wire nails through them edgewise into the middle strip. Succeeding strips are fitted and nailed in the same way until the boat is covered, each strip being nailed firmly to the one next to it already in its place. When the boat has been entirely covered, the section boards can be removed, when a very stiffly built boat will be presented to view. It is not completed yet, however, but must have a rail or finish around the top, a short deck forward through which to "step" the mast, and a keel added to the bottom. The latter is to be secured to the boarding, but for additional strength there may be a strip of iron extending down the front of the stem post along the bottom of the keel and up to the top of the stern, being secured to the wood at frequent points. The eye-pieces on which to hang the rudder can extend through this strip of iron into the wood.

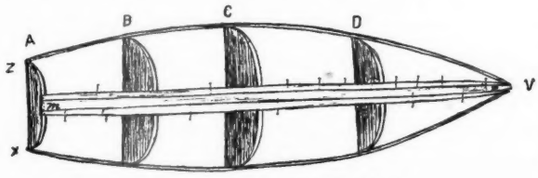


FIG. 1. SECTIONS OF THE BOAT.

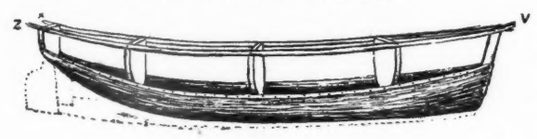
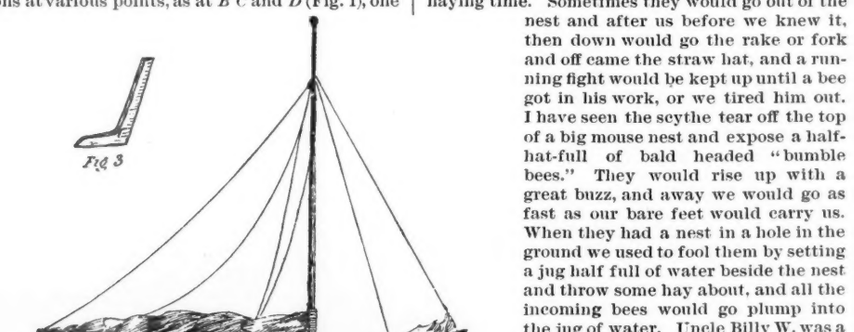


FIG. 2. THE BOAT IN OUTLINE.

If the strips that are used in covering the boat are well fitted when put on, the whole will be very tight when completed, a coat of thick paint being a sufficient protection against the entrance of water. If it is desired, a few ribs of flexible hard wood may be inserted after the boarding has been put on, but if the boat has been properly fitted and nailed they will hardly be necessary, A few of these hard wood pieces should be placed at intervals upon the bottom, however, and a light flooring of thin boards placed upon them to support the weight of those who comprise the crew or passengers.



FIGS. 3 AND 4. STERN POST AND FINISHED BOAT.

Bumble Bees.

How the boys used to dread "bumble bees" in haying time. Sometimes they would go out of the nest and after us before we knew it, then down would go the rake or fork and off came the straw hat, and a running fight would be kept up until a bee got in his work, or we tired him out. I have seen the scythe tear off the top of a big mouse nest and expose a half-hat-full of bald headed "bumble bees." They would rise up with a great buzz, and away we would go as fast as our bare feet would carry us. When they had a nest in a hole in the ground we used to fool them by setting a jug half full of water beside the nest and throw some hay about, and all the incoming bees would go plump into the jug of water. Uncle Billy W. was a great mower, and commanded great respect from us boys for his feats with "bumble bees." When he detected the presence of a nest by the roaring, he would drop the scythe, gather a bundle of new mown hay and lay it quickly upon the nest, and dropping beside it on his knees, repeat a few mysterious words, whip out his "sand rifle" (homemade whetstone) and be ready to knock the bees tumbling into the stubble as fast as they came out. Then when all was quiet he would dig out the honey and we would eat it.

Most country boys know a drone "bumble bee" when they see it, and know he won't sting. Ed Jones once fooled a city boy pretty badly. He caught a drone in his two hands, shook it about and said some lingo over it, then opened his hands and let it sail away. The city boy asked Ed if he thought he could do that. Ed said he could. Then the city boy slipped up and clapped his hands over a fine bee that was just entering a pumpkin blossom, but he had no more than closed up his hands than the bee stung him terribly. One should know all about the habits of the "bumble bees" before he tries fooling with them.

Prize Puzzle Contest.

For the five best lists of answers to the following puzzles we will give prizes, as follows:

For the first best list we will give an AMERICAN AGRICULTURIST telescope, valued at $3.00.

For the second best list, a Florence plush toilet set, valued at $2.00.

For the third best list, six nutpicks and nutcrack, valued at $1.50.

For the fourth best list, scrap and card album, valued at $1.00.

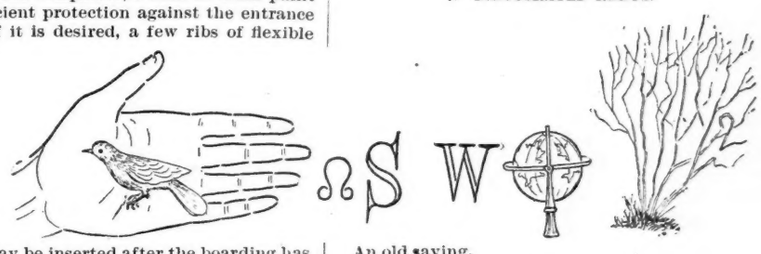
For the fifth best list, Relief fountain pen, valued at 75c.

These prizes will be forwarded prepaid to those who send the five best lists of answers. We do *not* offer prizes for every list sent in, but only for the five best lists. Answers must be mailed on or before the 20th of this month to "Puzzle Editor," AMERICAN AGRICULTURIST, 52-54 Lafayette Place, New York.

6. DECAPITATIONS.

Behead consecrate and leave to grant.
Behead to twist together and leave to thrive.
Behead an agreement and leave to perform.
Behead hasty and leave a tree.
Behead a street and leave a neighborhood.

7. ILLUSTRATED REBUS.



An old saying.

8. ANAGRAM.

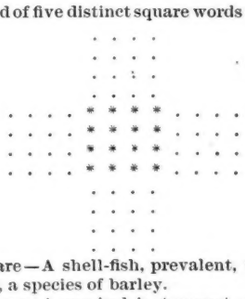
I am that ice-man. (The answer is one word.)

9. NUMERICAL ENIGMA.

I traveled over the 9, 8, 5, 6, 21 roads in order to reach 22, 19, 23, 10 in time to meet my 29, 4, 18, 30, for which I think I deserve 2, 14, 24, 15, 12, 10. We met with an accident and I went 26, 5, 25, 4, 16, 17 out of a window; but I made a 17, 20, 1, 13 at a 31, 1, 4, 27 and landed in a clump of 21, 7, 28, 11, 16, 32. The answer is an old saying.

10. A GREEK CROSS.

Composed of five distinct square words as follows:



Top square—A shell-fish, prevalent, the southwest wind, a species of barley.

Left square—A musical instrument, an animal, to disturb, a cloak.

Right square—A stiff hat, a genus of birds, flimsy, to watch.

Bottom square—A species of zither, a work, a sharp blow, begs.

Center square—A boat, frost, a genus of fishes, a drink.

11. AN AVIARY.

The lost was found, and my wooden leg returned.
We, having been over the course, returned home.
He was a hero now; he had done a brave deed.
He put on the packing, letting the ends lap.
They made the hag donate half her stealings.
The pipe was put in a mouth too big for a shark.
First, one chattel mortgage was put on, then another.

The Piney Woods Country.

In a general way the piney woods country may be bounded on the east by the Atlantic, on the south by a line running through Jacksonville, Fla., and by the Gulf of Mexico, on the west by the Mississippi river, and on the north by a line running one hundred miles north of, and parallel with, the Gulf. It is a new-old country. The surface is undulating, and spring streams numerous. The swamps are confined to the bottom lands of the streams and to a narrow belt along the Gulf coast. This vast section is yet nearly all a pine forest, less than one per cent being under cultivation. In many counties deer and bears are yet numerous. The soil, with fertilizing, produces abundance of almost everything excepting small grains. Without fertilizing it is not worth working. At present the most valuable crops grown are cabbage and Irish potatoes, the cabbage being planted mostly in January, and the potatoes in February and March. Much attention is being given to pear culture, and with the number of young orchards being started this crop will presently rank in importance close to the cabbage and potato. Grape culture, also, is attended with success. The vegetable or fruit grower here has, of course, the advantage of putting his crops into the market of Northern or Western cities weeks or even months before the home-grown. The railroads help in their way by furnishing special cars, and in the season special trains.

Though the rain fall is abundant, over sixty inches per annum, the dry spell sometimes comes at just the wrong time, and there is some little move toward irrigation. The facilities for irrigation are excellent, a great many small streams, all spring fed, with abundant fall, and large areas of level or slightly sloping land within reach. The bottom lands along all the larger streams are subject to overflow, and are unhealthy. The pine land comes in where the overflow stops, and there is no more healthful section anywhere than these pine lands. A great many Northern people come down to the coast country every winter for health or pleasure, and in the summer it is a resort for well-to-do residents of the cotton raising districts of the interior. It is not too hot in summer for outdoor work, and in winter there is, at least along the Gulf, only an occasional heavy frost. The past winter has not stopped roses and Camellias from blooming right along. Land varies in price from $300 per acre in the market garden suburbs about Mobile to fifty cents in the back districts for tracts that have been despoiled of their timber. There is yet much government land subject to homestead entry within a few miles of railroad.

JUD PIERCE, Mobile Co., Alabama.

What Texas is Doing.

The largest wheat farm in the United States, except California, is situated in the Pan-Handle of Texas, or what is known as West Texas. A company of capitalists, among them some of the best business men of Dallas, Fort Worth and Colorado, have purchased 10,000 acres on the railroad ten miles east of Colorado. The tract lies high and almost perfectly level, and the soil is rich and deep, with hardly any timber. This flat is ten miles wide, extends forty miles north and south, all being adapted to cultivation. Twelve immense gang plows have been ordered for the use of this mammoth wheat farm. A wheat field of 10,000 acres in extent was hitherto unknown in Texas. Texas also has a mammoth orchard one mile east of Mineola. In seasons favorable for fruit, car load after car load of strawberries are shipped to Chicago and the Northwest. A little later on from the 150-acre orchard of choice peach trees a good many car loads of peaches are shipped to the East. Still later the eighteen-acre vineyard will supply many car loads of the finest grapes ever grown. Then will come many cars of apples from the orchard of 150 acres or more.

In the Brazos valley are many fields of cotton of 1,000 acres each, and corn fields of five hundred acres are common in the great State. Her annual cotton crop is 1,500,000 bales; 180,000,000 bushels of corn. There are 250,000 farms in the State, and $25,000,000 are invested turning out an annual product worth $50,000,000, and employing 20,000 men and women. Within her borders are 7,500,000 of cattle, 4,500,000 sheep, 1,400,000 horses and mules, eleven canning factories turning out annually over 2,000,000 cans of fruit and vegetables, while we must look at her production of wheat, oats, sugar, rye barley, hay, alfalfa and other lesser crops, and remember she is ready to make a grand showing at the world's fair at Chicago.

W. L. MOORE, Denton Co., Texas.

Agricultural Prospects in Tennessee.

The South is destined to become a great wool-producing section. With reference to other live stock it may be stated that the grasses of the valleys are admirably adapted as food for cattle; the climate is also especially favorable, avoiding the extreme cold of the Northern winters and the extreme heat of the Southern summers; the coldest I have ever known it in Tennessee was nine degrees below zero, the hottest was ninety-eight degrees above zero. The summers are long, the winters are short; thus, successive crops of grass can be grown, giving constant pasture. Within the past few weeks the largest of the Western beef-packing houses have located branches in Southern cities. A million-dollar packing house has been established at Nashville, and another, equally as large, is contemplated at Chattanooga. This will give a market for Southern cattle. In cereals, the valley lands of the South average as large a yield as do the prairie lands of the Middle and Western States, but the Southern average is not as large as the Western, since there is a vast acreage of mountain land in the South which is valueless except for sheep raising. Fruit raising pays. Within my personal knowledge as high as $2,000 an acre has been cleared on tomatoes and $1,000 an acre on onions. This, of course, is much more than an average, but small fruits have never failed to pay where they have been systematically raised. Orchards, however, have not always been successful; peaches are very uncertain; while apples grow nicely, they are hard to keep, frequently rotting on the trees before fully ripening, even when they are to all appearances perfectly sound. Cabbage grows well but is more difficult to keep sound than at the North. Irish potatoes pay well but require a little closer attention than at the North. Sweet potatoes grow rather too large, but the crop pays well. Berries of all kinds thrive and pay handsome profits. The valleys are well watered, and it is seldom that a well has to be sunk over fifty feet, while thirty or forty feet is usually deep enough. In the agricultural districts school facilities are not so good as those of the North, but the towns are pretty well supplied with free graded schools. As a rule the country schools only hold four or five months in the year. It is not difficult, however, to obtain good teachers, and the State has a special school tax, hence this is a trouble which each neighborhood can to a large extent regulate for itself.

FRANK L. WELLS, Hamilton Co., Tenn.

The Cow of New Mexico and How She is Milked.

It may seem strange to Eastern people that milk and butter are so little used on the great cattle ranches of the West and Southwest where thousands of cattle may be seen any day in the week. But when we consider that these cattle run at large, living on the natural hay of the plains, that they are half wild and are difficult to manage, no one will wonder that milk and butter are regarded as unnecessary luxuries. As an example: I recently witnessed a ranchman and his family milking a bunch of these range cows. It was in the Gaudalupe mountains in Southern New Mexico, almost on the Texas border. The man was a moderately well-to-do ranchman with a few hundred head of cattle and a fair range in a most beautiful spot, well up in those rugged mountains. Both he and his wife were good types of the Western people. They entertained me for several days, and did it well, as all people of that section do; and, as is usual, when I left refused to allow me to pay them anything. I cannot testify too strongly to the honesty and generosity of the ranchman of the Southwest.

When I arrived at their house the entire family was assembled about the corral in a state of intense excitement and bustle. From the corral a constant bellowing issued forth and circling around it in mad career were about a dozen cows, followed by the whole family. As I rode up the performance temporarily ceased, and, while the other members of the family stared at me, the ranchman saluted me with the conventional "Howdy, stranger; won't you get down?"

I got down and the family resumed their work. I had interrupted them in corraling the cows. The corral was divided into two parts, in one of which the cows were shut, and in the other a dozen very young calves, the source of the bellowing which still continued. The cattle had been out feeding since morning and the calves had been temporarily weaned during that time. Their bellowing resulted from hunger.

The milking was a rather exciting scene. Each cow had to be lassoed and tied horn and foot and even then the milker was in considerable danger. The children lassoed and tied the cows, and I was surprised to see the dexterity of the little fellows, each of whom was under twelve years of age. The wife was even more dexterous than the husband in milking the unruly animals, and she seemed to have a soothing effect upon them.

Finally the milking was done and the gates opened, and in rushed the calves, and then such a scene! They must have been nearly starved. Sometimes two would go to the same cow, but she would stand none of that, and both would be driven away. The calves were so hungry that they did not always stop to seek out their own mother, though some went from cow to cow until they come to their own place. In less than three minutes all was quiet, the cows chewing away contentedly at their cuds and the calves sucking vigorously at the nearly empty teats in the vain effort to satisfy their hunger. There was little fear of their gorging themselves.

This surely was milking under difficulties, and the total product of all that work in milking twelve or thirteen cows was less than a gallon of milk! No wonder that most of the bachelor ranchmen use canned condensed milk, or go without altogether, which is more frequently the case.

T. RALPH, Dona Ana Co., N. M.

Good Prices for Virginia Tobacco.

Our farmers are better off this year than they have been for many years. This is on account of tobacco selling so well—most of them had a good crop of that article on hand. It is a hard thing to see people go down the hill year after year in spite of all their scuffling. A good tobacco market is the only thing that can save "our people," for it is about the only thing they understand. This is decidedly a fine country. The clearings that have been for many years in cultivation are to some extent worn out, but away from the railroads clearings become scarcer and better, and the country abounds in fine forests, wild turkeys and some deer. Two gentlemen from New York were here with me on a hunting party a few months ago. After shooting a profusion of "quails" (partridges we call them), they had a general view of the country, and were enraptured with the Virginia scenery. For a laboring man this is, in my estimation, the poorest section in the world just now, for we have, compared to the small demand for labor great numbers of colored people who work for little; but for a man of some capital this country cannot be excelled. When I came here the second time in 1876 I bought one of the poorest pieces of land in the country. This was a foolish step, but I stuck to the land and improved it, and now I have several fields that yield fifty bushels of wheat to the acre.

W. STAPELKAMP, Amelia Co., Va.

Beef Cattle Prospects.

Those persons who are counting on better prices for their cattle in the near future, owing to the decrease in the output of range cattle, are likely to be disappointed. The great wave of immigration that flowed into the range country some five years ago has been ebbing ever since. Now there is scarcely one of every hundred left. The attempt to make money by farming without either capital or labor has resulted in failure. This immigration had the effect of breaking up most of the big cattle companies. Since the settlers left, the cattle are increasing very rapidly in the western third of Kansas and Nebraska, Eastern Colorado, New Mexico, Panhandle Texas, and "No Man's Land;" a very large area capable of producing an immense amount of beef at small cost.

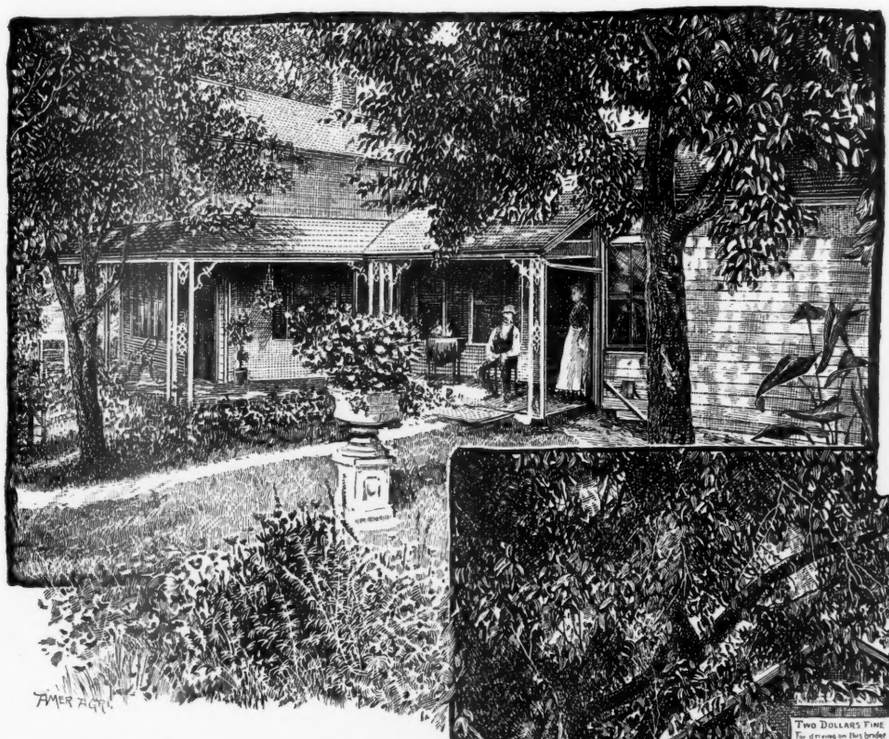
At present the business is mostly in the hands of

persons who were formerly in the employ of the companies, and settlers who were able to adapt themselves to their surroundings. The herds number from fifty to five hundred head each. The sales are small now, for all females are kept for breeding. When these vast ranges become well stocked the output of beef will be very large. It is to be hoped that for the benefit of the cattle-raiser there may be causes at work that will increase the price of beef cattle, so confidently predicted, but a dearth of range cattle is not likely to be one of these causes.

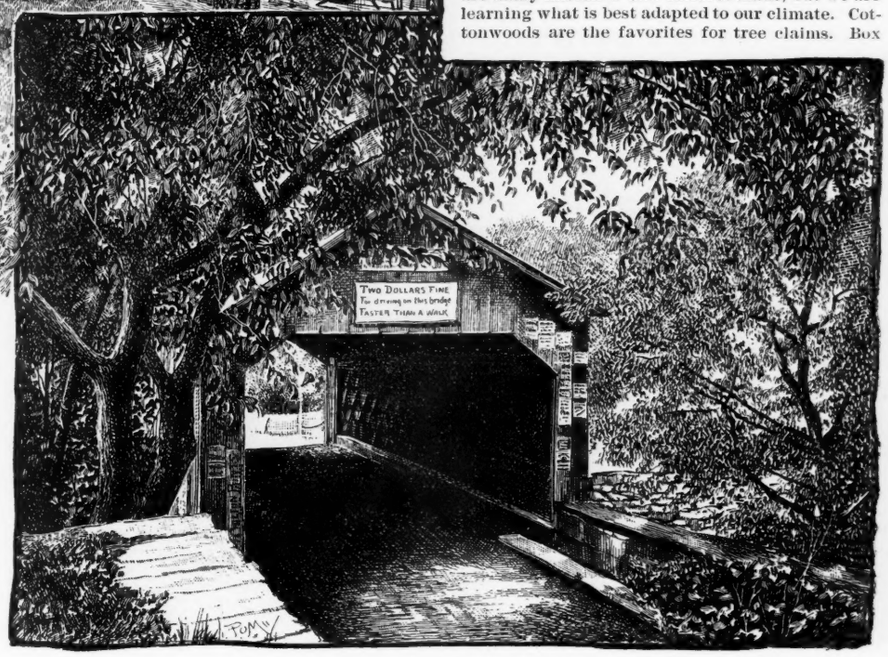
W. V. JACKSON, Comanche Co., Kan.

Picturesque Vermont.

Vermont, the Green Mountain State, has no more picturesque bits than are found at the entrances of her quaint covered bridges. These are



A VERMONT FARM HOME.



A PICTURESQUE VERMONT BRIDGE.

all the more precious to the artist because the touch of time, railroad fires, and the vandal hand of the tramp are all combined to make them gradually a thing of the past. As they slowly disappear they are replaced by stronger structures of modern design. The engineer is interested in them because in their day they were undoubtedly the most satisfactory structures, both from an economic and an engineering point of view, that could have been devised.

In examining their details one is struck by the economy of material, its admirable disposition, and the strength and durability obtained by the simplest means. The bridge shown in the engraving, with its characteristic notice of a $2.00 fine, which is always disregarded, is situated in the village of North Ferrisburgh. It is three or four miles east of Lake Champlain, and about midway between the old city of Vergennes and beautiful Burlington. The bridge suggests the reason for the village. In times past Vermont was a manufacturing State, and given a water power a village was certain to grow up around it. The water power determined the location of North Ferrisburgh, and the bridge crosses the stream just above the "lower dam." A steep hill leads down to it, and from the other end one gets in the picture a glimpse of the pretty, level street that stretches away from the other end. The side trusses of the bridge are of the lattice pattern. This lattice is of white pine plank twelve inches wide and four inches thick. The openings between the planks are two feet square. At each intersection there are two wooden pins, carefully turned, about three inches in diameter. Pine beams at the bottom twelve inches square, and others of the same size at the top are used for carrying the floor and supporting the cross trusses. Examination fails to show a dozen pounds of iron except the nails to hold the covering boards and shingles in place. In the days when lumber was cheap and abundant, what construction could have been cheaper or better for the purpose? The weight which these bridges carry is surprising, and the way in which carriages pass with the horses trotting sharply, in spite of the fine, is something which makes one respect not only the bridge but the workmen who in the olden time built so honestly and wisely.

Just up the hill from the bridge is the farmhouse illustrated in the upper engraving. Its wide and long veranda commands the entrance to the bridge. Trees and plants make the yard a glory in summer, and in winter the same plants make the wide, low rooms almost tropical with their brilliancy. Years ago the owner had a woolen mill on the stream a hundred yards away. Then the steam engine could not compete with the water-wheel. The stream, of regular flow from thickly wooded mountain slopes, was a good servant. Transportation was by water, and the manufacturing flourished. When the watershed was stripped the stream became an idle succession of pools in summer. Railways brought the great water powers near to every market, and took the wool from far and near. The profit became small, and when at last the well-built mill was burned it was never rebuilt. A dozen old wooden pulleys saved from the fire are all that remain of the ingenious machinery which was, according to the fashion of the time, built on the spot.

But did ruin stalk in at the door? By no means. Vermonters are not so easily discouraged. Then came a time when farming paid. So the farm was worked, milk was taken to the cheese factory, and money came in as usual. Then the cheese factories did not pay. They shut up right and left. Vermont was evidently getting left by reason of the broad wheat fields of the West. Our jolly friend, however, had no idea of selling out and leaving the picturesque home. So along the intervale land he planted strawberries, and from the best of fruits he made money for several years. But the increase in the cost of labor, the running out of the plants, and competition drove him out of the strawberry culture. There are other things that will grow out of the ground besides strawberries, and that people are willing to pay for. So some acres on the hillside were planted with blackberries of various kinds. Though the source of supply has several times changed, the stream of dollars has steadily flowed into the pleasant veranda-shaded house.

This is not only a typical Vermont house, but the case well illustrates that of hundreds of farmers, manufacturers, and others in the State. It is, in fact, a type of the State itself. The keynote is the ability and will to be profitably industrious. The industry changes with the varying conditions of the markets, of manufacturing, and of agriculture and commerce. The work, however, goes on. The State is constantly producing that which it can dispose of at a profit, and its hillsides are covered with pleasant homes. The ability to think and do makes the Vermont farm, in spite of Western competition, a safe six per cent investment.

W. E. PARTRIDGE, Addison Co., Vt.

Treeless Dakota.

This term of reproach is sometimes applied to our fair prairies, but it will soon become obsolete. Naturally there is no timber except in the valleys of the Missouri, James, Cheyenne, and Red rivers, for our prairies are "high and dry," but tree claims are beginning to dot the landscape. There are many mistakes and failures made, but we are learning what is best adapted to our climate. Cottonwoods are the favorites for tree claims. Box elders are used to some extent, but are too shrub-like in their growth. Russian poplars and willows are being tried.

Damming the Nile.

The Egyptian Department of Public Works, at Cairo, is actually engaged on the question of storage reservoirs. Since the completion of the barrage the Nile has ceased to flow into the Mediterranean for three months in the year. Mr. Willcocks has examined the whole valley of the Nile, from Cairo to Assonah, and reports that no water can be stored to the north of the First Cataract. He has designed a dam, which might be built at Philœ, but, unfortunately, this would only give one-third of the quantity of water required and, besides costing $3,750,000, involves the destruction of the well-known ruins at Philœ, which would be wholly submerged.

SCIENCE IN FARMING.

An Authority in Agricultural Chemistry.

Professor G. C. Caldwell was born in Framingham, Mass., in 1834, and spent his boyhood upon his father's farm. He received the degree of Bachelor of Science from Harvard College in 1855, and that of Doctor of Philosophy, at Gœttingen, Germany, in 1858. Dr. Caldwell began his successful career as a teacher of agricultural chemistry in 1863, when he left his position in the United States Sanitary Commission for four weeks to lecture at the Pennsylvania Agricultural College. Dr. Evan Pugh, then president, while chumming with Mr. Caldwell in Germany, in 1857, awaked in his subsequent associate a deep and abiding interest in the subject to which Professor Caldwell has devoted his life. In 1864, after the death of Doctor Pugh, Professor Caldwell returned to the Pennsylvania Agricultural College and assumed the whole charge of the chemistry. Four years after he accepted the professorship of agricultural and analytical chemistry in Cornell University, a position he still holds with marked ability. Soon following this appointment Dr. Caldwell published his work on "Agricultural Chemical Analysis," the first to appear upon that subject in this country. He is a member of many scientific associations, was one of the founders of the Association for the Promotion of Agricultural Science, in 1880, has taken a prominent part in the work of the Association of Official Agricultural Chemists in unifying and perfecting methods of analyses of fertilizers and feeding stuffs, and is the present president of the society. He was a leader in originating the experiment station at Cornell University, in 1879. Dr. Caldwell has been a constant and welcome lecturer before many agricultural and horticultural associations and clubs, as the American Dairyman's Association, the Western New York and the Massachusetts Horticultural societies, Elmira and the Syracuse Farmers' clubs, etc. He has been active in the farmers' institutes from their inception, and the remarkable success of this method of education for farmers is largely due to his efforts. Aside from the vast amount of excellent work as briefly sketched above, Dr. Caldwell has been a frequent writer for the AMERICAN AGRICULTURIST and other periodicals.

It is interesting to note that the early days of this preëminently useful man in agricultural science were spent upon the farm. He was a farmer when a young man, and learned thoroughly the ordinary operations of the farm, so that in teaching agricultural students, in addressing farmers' meetings, or writing for the press, he was able to speak or write from a most valuable experience. Among many other lessons it is gathered from his life that a seemingly small matter may decide questions of great moment. It was the reading of a translation of Stœckhardt's Chemical Field Lectures that first turned Dr. Caldwell's interested attention toward agricultural chemistry, while he was helping his father carry on his Massachusetts farm. At that time Stœckhardt was one of the leading agricultural chemists of Germany. Soon after this a special interest in general chemistry began in the study of another work by the same author. The will and the way were provided, and to-day we have in Dr. Caldwell one of the world's leading students and exponents of chemistry as applied to agriculture.

Gleanings from the Bulletins.

GEORGIA, No. 11, pages 46. In the nitrogen experiments with cotton it was found that the soil is deficient in both phosphoric acid and potash, and neither of these when used alone gave as good results as when combined; that soil also requires nitrogen in order to produce a good yield of cotton, but nitrogen alone produces little or no effect. Stable manure and cotton seed composted with superphosphate and muriate of potash are strongly recommended. Cotton is not as particular from what source its nitrogen comes, but prefers it in organic form or as nitrate rather than sulphate of ammonia. It responds quickly to the nitrogen manures. The topping of cotton materially affects the yield when done during July, there is always an injury. The old notion, that plants topped by the bite of a mule increase the fruitfulness, may be ill-founded. Experiments show that the yield is in favor of shallow culture over deep tillage, while the expense is much less. Cotton in drills 3½ by 19 inches gave 590 pounds of lint per acre, while that in hills 3½ by 3½ feet yielded only 508 pounds, or a large percentage in favor of the drills. With sweet potatoes the yield is governed by the amount of potash in the fertilizer and a brand with eight per cent phosphoric acid, three of ammonia, and ten of potash was most effective. With tomatoes nitrogen alone gave no increase, but the minerals produced a marked increase; nitrogen with the minerals gave a gain over the minerals alone. Earliness is in proportion to the effectiveness of the fertilizer.

KANSAS, No. 14, pages 14. Experiments upon the winter protection of peach trees have proved fairly successful. The method consists in developing a suitable head to the tree by removing wide spreading branches, cutting off some of the roots, removing the earth from one side of the base of the tree, and laying the tree down and covering it with old hay. As a result last year there was a fine crop of fruit upon the treated trees, while from others the fruitage was light. The cost of putting down the trees is about twenty cents each, and a net return of a dollar and a half. The bulk of the bulletin is occupied with a report of tests made with sixty-four varieties of American grapes. As the experiments have been carried on for only two years, no conclusions are presented.

MASSACHUSETTS (Hatch), No. 12, pages 32. The life history of several insects is given, among which are treated the bud moth, spittle insects, squash bug, pea weevil, bean weevil, May beetle, plum curculio, onion maggot, cabbage butterfly,

PROF. G. C. CALDWELL.

tent caterpillar, and codlin moth. Each species is shown by engravings, and methods of treatment are fully given, thus putting in convenient form a large amount of information.

MASSACHUSETTS (State), No. 39, pages 12. The methods of treating fungous diseases are given in full. There is a hygienic treatment of plants not to be overlooked, and this includes the cleaning up of rubbish from the ground and burning it, thus destroying multitudes of spores. Methods of preparing fungicides are given, with the cost of each, and the most improved implements for spraying are also treated in full.

MICHIGAN, No. 70, pages 42. In this is a lengthy report of results with testing several lines of garden vegetables. From the elaborate tests of different parts of the potato as seed it is concluded that it is well not to use the stem end, as the eyes are weak and poorly developed. By cutting the seed lengthwise the ends may be used in connection with eyes near the middle of the tuber. It was also found that single eyes, and quarters may be placed in drills from a foot to fifteen inches apart with good results; when halves are used the distance may be increased to two feet, and with whole tubers two and a half feet. About twenty bushels of seed are required per acre. A whole small potato is not so good as a half of one twice as large. The planting of small potatoes should not be kept up from year to year. The greatest yield was with seed planted one inch deep.

MISSISSIPPI, No. 14, pages 42. Many injurious insects receive attention, including pea and bean weevils, cucumber beetles, peach borer, ox warble, plum curculio, codlin moth, with no lack of treatment of the same with insecticides, including a full exposition of spraying pumps and other apparatus. The leading subject is the screw worm, long known in South America for its attacks upon man, and is a serious enemy to animals in the South. The eggs are laid by the mature fly in any wounds of the victim or natural openings. If the attacked animals are left untreated they lose flesh and may die of blood poisoning. When the worm is abundant, animals should be frequently examined; the treatment depends upon the character of the wound, chloroform being preferred for fresh wounds, and carbolic acid for old ones. As the eggs are laid in dead flesh and decaying vegetable matter, all such should be burned or buried. Cold winters destroy many of the worms and, therefore, the pest is at its worst after a warm winter.

OREGON, No. 10, pages 34. This bulletin gives the results of experiments to demonstrate the utility of combining a fungicide with an insecticide. The apple tree was the subject and the codlin moth, and the scab, the insect, and fungous enemy respectively. Arsenic was used for the insect, and sulphide of soda for the fungus. The Paris green saves nearly all the fruit, and the fungicide keeps off the scab. Twenty-five days may elapse between sprayings if the weather is favorable. Whale-oil soap mixed with the two substances helps in causing them to adhere. All wormy apples should be removed from beneath the trees and destroyed. The main point now is to find how few sprayings will suffice. A large number of the most improved spraying machines are illustrated. The second part of the bulletin considers the hop louse which is prevailing in Oregon. The life history, with engravings is presented in full. As these lice live in one period of their life upon plum trees it is important to destroy all such near hop yards. The infected ones should be burned at once after picking time, before the winged females fly to the plum trees.

OREGON, No. 8, pages 18. A very extended list of wheats has been tested by the station, and with all such important work it is impossible to draw conclusions until the tests have been carried on for more than a single season. The first object was to discover, if possible, some sorts that would be more profitable than those heretofore grown in Oregon; and secondly, to determine the effect of change of soil and climate upon the character of the product. Thus far in no case has the introduced wheat deteriorated, and frequently there has been a marked improvement. A French wheat, for example, after two years can scarcely be classed with the original. Many dark wheats from the East have become light colored. Dark amber wheats tend to become of a light amber color. The experiments point toward the fact that excessive pulverization of the seed bed is not an advantage. Spring wheats of other localities may be sown here in the fall. Martin's amber is one sort that has done well in Oregon. Two sorts originating from hybridizing wheat and rye are very hardy. At the end of another season samples of the better sorts will be distributed for a more extended trial among the farmers. The tests with flax, while not flattering, indicate that this crop may be grown with profit.

RHODE ISLAND, No. 9, pages 24. Very few stations are experimenting with bees, therefore this bulletin treats of subjects of more than local interest. Under artificial heat it is shown that the average temperature of the cluster at night is no higher than when no heat had been used. Artificial heat increased the rearing of brood, and a much larger amount of honey is secured. If extracted honey is the object and no increase in the number of colonies is desired, doubling will give the best results. Carniolan bees may be of value for quickly building up a large apiary, but for judicious crossing, the bee-keeper is advised to use American Italians in the production of extracted honey. For finest comb honey the common black bees, or blacks crossed with Italians are the best. Foul brood is due to a minute vegetable organism, *Bacillus alvei*, and is transmitted to healthy colonies by inoculation. In its worst stages not only should the comb be destroyed, the hives disinfected, and bees confined for several days without comb, but forced to feed upon medicated syrup. Great care should be taken in buying bees. Frame hives are better than box hives, and should entirely supersede them.

FARMING IN FOREIGN LANDS.

The subscription to Gen. Booth's "Darkest England" fund has reached upwards of $530,000.

The cultivation of tobacco in British North Borneo is rapidly increasing. The output for last year was a million and a half pounds.

French parents possessing seven or more children have certain exemptions from taxation. In France there are 150,000 families so exempted.

A dog show of unprecedented dimensions was recently held at the Royal Agricultural Hall, Islington, England; the entries numbered more than 2,500 and the value of the prizes exceeded $10,000.

Near Milan, Italy, 22,000 acres of land, irrigated with water from the city sewers, are yielding crops of from eight to ten tons of hay as a rule, while occasionally some separate meadows will yield even larger amounts.

A Glasgow, Scotland, milk seller was recently fined twenty-five dollars, with the alternative of thirty days' imprisonment, for having sold a quantity of sweet milk which contained 56 per cent of added skim milk.

On account of the mildness of the winter in Scotland, where the weather has been in marked contrast to that of England, the spring exhibition of the Caledonian Horticultural Society was one of the finest on record.

The rape seed acreage of the Punjab, India, is 411,200 acres, being 113,200 acres in excess of last year. The crop is expected to be a very good one. The wheat area this year is 7,234,200 acres, or 1,011,300 more than last year.

At the general meeting of the Schleswig-Holstein Dairy Association, Herr Biernatzki proposed to form provincial associations for the revision of dairy associations. A commission was then formed to take the matter in hand.

According to present indications the coffee crop of Brazil for 1891-92 will be, at the minimum, 4,500,000 to 5,000,000 bags, but in view of the present disorganization of agricultural labor not more than 4,000,000 bags can be counted upon for export.

Lord Willoughby de Eresby, an extensive land owner in North Wales, has returned his leaseholders half their ground rents, and the tenant-farmers 10 per cent on their rentals. It might be well if some others would show the same consideration.

The Austrian grain growers, through the official report of the Vienna Agricultural Congress, declare and complain that "the grain exporting capacity of Russia and extra European countries is the source of a calamity affecting the whole of Central Europe.

The utilization of peat as a substitute for coal is engaging the attention of the Irish Industrial League. A new process is described by which wet peat can be converted in twenty minutes into a fuel as hard and dense as the best coal, at a cost of $1.25 per ton.

Dr. Anton Sticker, of Cologne, Germany says that by the use of Dr. Koch's lymph on cows there is no doubt but what the diagnosis of the disease may be ascertained if they have tuberculosis, making it easy to eradicate among animals since it can at once be detected.

One of the first projects to be presented to the new Italian Parliament will be the scheme of home colonization worked out by Signor Fortis, ex-Under Secretary of State. There are in Italy about 11,200,000 acres of uncultivated land, of which 800,000 are susceptible of cultivation.

The exports of flaxseed from Argentina are 40,000 to 80,000 tons per annum, half of it going to Great Britain and twenty per cent to the United States. Our own country imported 97,212 tons in 1890, and exported only 1,960 tons. The crop is not specially popular, though in good seasons is quite profitable.

To encourage the breeding of Shropshire sheep in Ireland, the Shropshire Breeders' Association have offered the County Cork Agricultural Society, for their show this year, a prize of twenty-five dollars for the best Shropshire ram of any age shown by an exhibitor whose holding is in Ireland.

Venezuela may prohibit the importation of lard, as the adulterated stuff imported from the United States is said to be one cause of typhoid fever. Consul Plumacher adds that "American so-called butter is notorious in Venezuela for its absolute worthlessness. Kerosene is also an American monopoly, but by far the greater part is unfit for use." He emphasizes the shortsighted policy of exporters shipping inferior and even dangerous products.

On the estate of Baron Wodianer, in Swandau, Hungary, recently a pack of wolves attacked and killed over twenty laborers, the unfortunate men being completely devoured, with the exception of their feet and boots. A hunting party has been organized to endeavor to exterminate the wolves

A meeting was recently held at Halle, Germany, for the formation of an association for improving the condition of agricultural laborers and combating social democracy. Eight hundred land owners of the province have joined the association and letters of approval have been received from all parts of Germany.

South Australia has recently been visited by a plague of locusts, which have caused great damage in parts of the colony. Near Guorn the locusts were so numerous that they stopped a train. The insects covered the track for some distance and the train could not proceed until the rails had been sanded.

Among the many formidable weeds with which the New Zealand farmer has to contend, perhaps that thistle familiar to Americans under the names of California, Canada, and Corn thistle is the most difficult to eradicate. In fact, our New Zealand friends are having the same experience with the Canada thistle that we are.

The cost of the vast Trans-Siberian railway, which Russia is about to begin, is estimated at $375,000,000. Russian commerce with China is estimated at $12,000,000 annually, and will, by means of this railway, receive considerable impetus; and Russia also hopes to develop a large commerce with Japan, and the French, Spanish and Dutch colonies of Oceanica.

The imports of Victoria, Australia, amount to $115,000,000 in value annually, coming principally from England, New South Wales and the United States. The latter country furnishes about $5,000,000 a year, mainly preserved fish, furniture, hardware, kerosene oil, timber and tobacco. Victoria imports one-third as much tobacco from us as she takes from Great Britain.

There is some talk of Russia attempting the cultivation of tea on the shores of the Black Sea. As a preliminary step to the breaking down of the monopoly enjoyed by the Chinese and other merchants, a Russian agent has been established in Ceylon for the purchase of Indian teas, dried and rolled by machinery, instead of by the primitive and unclean methods prevailing in China.

The French authorities have withdrawn the prohibition on Russian sheep which has been in force since 1883. Sheep will now be admitted from various Black Sea ports under strict veterinary inspection. Previous to 1883 France formed an important outlet for Russian mutton, and it is stated that, although the new order only came into force about the new year, considerable numbers of sheep are already being sent from Russia into France.

At the London Hospital, England, a young woman recently died from anthrax. She was a hair sorter employed in sorting black and white cows' hair from colored. Post-mortem examination showed an ulcer at the lower end of the small intestine, and that the swelling was the result of anthrax, commonly called "wool-sorters' disease." It was a cattle disease, and persons working at hides or hair would be in danger of being infected with the anthrax bacillus.

Prof. Brown, of the Longenong Agricultural College, is calling the attention of the Western Australia colonists to the necessity for taking immediate steps to conserve and develop the natural forests of the colony. He estimates that the forests of Western Australia are of more value than those of any other Australian colony, and states that, after allowing the widest margin for overestimate, quite $500,000,000 worth of forest crops are ready for market.

Large quantities of butter have been exported from the United States to the French West Indies, but Canadian officials are now making strenuous efforts to obtain this trade. The duties on butter have been increased to fifteen francs per one hundred kilograms, in addition to which there is a local duty of three francs per one hundred kilograms, or a total of about one and one-half cents per pound. The duty on imitation butter is forty francs.

A case tried in Scotland under the British "Agricultural Holdings Act," has just been decided, after protracted litigation. It seems that an outgoing tenant claimed $4,850 from his landlord on account of unexhausted improvements, while the landlord claimed over $7,000 for dilapidations. Five well known valuers or appraisers gave evidence, and finally the case was referred to an arbitrator, who has granted $1,525 to the tenant for his improvements and $125 to the landlord on account of dilapidations. The case excited intense interest among Scottish tenants and landlords.

A landed proprietor of England, Lord Wantage, has distributed as a bonus to about one hundred of his farm laborers a portion of his profits after paying estimated rent and interest on the capital employed. He has for several seasons treated the men on his home farm in this liberal manner, and as above he has now extended the bonus to laborers on outlying farms. The total extent of the farms is about 8,000 acres, and the men to whom the payment has been made are those who have been employed for two years and upward and who have been of good conduct. Surely this is genuine philanthropy!

In these days of mammoth stakes it may be interesting to note that among the rich prizes competed for on the English and American turf the following take precedence: The Futurity Stakes won by Potomac (a son of St. Blaise) at Coney Island in August last, worth to the winner $67,950; Eclipse Stakes at Sandown Park, won by Ayrshire last year, $55,825; Prince of Wales Stakes at Leicester in 1889, won by Donovan, $55,000; Lancashir Plate, at Manchester, won by Seabreeze in 188, $51,110, and by Donovan in 1889, $50,655; the Eclipse Stakes in 1886 and in 1888 were each year worth $50,000 to the winner.

Small farms are the rule in Sweden, and the Swedish peasant usually owns the soil he tills. Over two-thirds of the farms are between five and fifty acres in extent, and more than twenty-three per cent are little homesteads of less than five acres. Oats is the great staple crop, and is largely exported, rye and barley being chiefly used for home consumption, especially rye. Young pigs are sold for high prices in England, and sides of American pork bought at cheap rates. Rye ripens up to sixty-nine degrees north latitude, and barley and oats up to seventy degrees, or on a parallel above the mouth of Hudson Bay.

The Swiss Butchers' Association made the experiment of importing 110 Chicago beeves via Antwerp, which reached Zurich within less than three weeks from New York. The round price paid at Antwerp was about seven cents per English pound. The meat retailed promptly at good prices. The association believes that American beef can be delivered at the principal cities at from one to two cents less per pound than the native Swiss beef can. The association's agent is C. Messing, 50 Lavater strasse, Enge, Zurich, Switzerland. That country is also a heavy consumer of American cotton, lard, leather, oil, salted meat and tobacco.

Farm laborers get an average of $225 a year with food and lodging in New South Wales, or nearly twice as much as was paid thirty years ago. Female servants get $165 per year, and mechanics $2.40 per day. The wholesale prices of food in New South Wales for 1889 averaged, for bran twenty-one cents per bushel; potatoes, $32 per ton; onions, $95 per ton; butter, twenty-five cents per pound; cheese, thirteen cents; eggs, thirty-one cents; bacon, fifteen cents; ham, twenty cents; honey, eight cents; hay, $20 to $26 per ton; straw, $17, maize, seventy-eight cents per bushel; oats, seventy-five cents; barley, seventy-eight cents; wheat, seventy-eight cents to $1.20, as to quality. California wheat sold at $1 to $1.14 per bushel during the year. American workmen in Sydney state that the cost of living is fully thirty per cent higher than in the United States, house rent twenty per cent more, wheat bread fifty per cent dearer than in San Francisco, and fruit too costly to be used, "in spite of its being a free port." Freight rates are also much higher than in this country, although the railways are owned and controlled by the government, the freight on bacon and grain being more than ten times higher. One-half of the men employed in industry in New South Wales work for the government. Yet one of the greatest strikes the labor world has ever seen has occurred in New South Wales. The practical application of the nationalistic idea has not realized the hopes of its advocates in New South Wales.

Pruning Hedges.—D. B., Vineland, N. J.: As a rule all evergreen hedges should be pruned in early spring before the buds push into growth. But if the plants are growing too vigorously and you wish to check them, prune later on after the new shoots are two or three inches long. Early pruning promotes growth and late pruning checks it. The same being true with all kinds of hardy trees and shrubs.

Money for Experiments. — Financial statistics of the agricultural experiment stations in the United States, as finally computed for the report of the Secretary of Agriculture for 1890, show the following aggregates: The station revenues for 1890 amounted to $973,146, of which $652,500 was received from the United States; $226,573 from States; $5,000 from local communities; $10,123 from individuals; $38,007 from fees for analyses of fertilizers, etc.; $33,974 from sales of farm produce; and $6,467 from miscellaneous sources. If we add to this the United States appropriation for experiment station divisions of the department of agriculture, $15,000, we have a grand total of $988,146 (about 200,000 pounds sterling) as the income of the experiment station system in this country last year. This is an increase of about $150,000 over the amount reported for 1889. "It is especially encouraging to observe that the appropriations by the several States have materially increased, showing that they appreciate the desirability of co-operating with the general government in promoting the interests of this great enterprise in behalf of agriculture."

White Pine Saw Fly.—Subscriber, Paterson, N. J.: The small worms which attacked the pine tree in your garden last summer, stripping them of their leaves, were no doubt the pine-tree slug, the larvæ of a fly known to entomologists as *Laphyrus Abbotii*. These worms will probably appear again this year during the month of June, and if not destroyed may spread widely and destroy many of the pine trees in your neighborhood. These slugs or worms may be readily destroyed by dusting the foliage of the trees with Paris green prepared and mixed as usual for applying to potatoes for killing the Colorado beetle.

The Mexican Apple.—J. Justin, Fulton Co., Ga.: The fruit known by the common name of Mexican apple, and botanically as *Casimiroa edulis*, is produced by a moderate sized evergreen tree, native of Mexico, where it is found wild as well as cultivated in gardens. The fruit is of a greenish yellow color when ripe, and has a delicious, melting flesh of the flavor of a ripe peach. It is quite probable that this Mexican fruit would thrive in the more southern States, but whether in Georgia or not we cannot say, still, it is worth trying. It may be that some of our enterprising nurserymen of the South have already tested this fruit and will give us their experience in its cultivation for the benefit of our readers.

Lehigh Coal.—D. B. T., Lehigh Co., Pa. You will need to be in haste if you desire to get up a demonstration on the centennial of the discovery of anthracite coal on the Lehigh, for it was discovered there by Philip Ginter in 1791. Eleven years later, or in 1802, Robert Morris, of Philadelphia, formed a company and purchased 6000 acres of the property on which Ginter discovered the coal, but it was many years before the said company could find sale for their coal, in fact, it never did sell much coal, and the members became so disheartened that they leased the 6000 acres for twenty years at an annual rental of one ear of corn. It is only within the past half century that Pennsylvania coal has become an article of great commercial importance.

Fertilizers for Plants in Pots.—V. R. Carr, Erie Co., N. Y., writes us: "You advise mixing one tablespoonful of superphosphate to a bushel of the soil used for potting plants. Is not this a mistake of the printer? Such a small quantity could do no good." We have had considerable experience in the use of fertilizers for many years, and do not recollect an instance where we injured plants when we attended to the application ourselves. But we frequently get letters from our readers complaining that the fertilizers do harm. And it is for this reason that we purposely recommended a tablespoonful to a bushel of soil. We frequently use double or treble this quantity. But if we had said three tablespoonfuls to a bushel many people would have doubled or trebled the amount, and damage would have followed. Four hundred pounds of superphosphate per acre is an abundant dressing for most crops. In an acre of soil a foot deep there are 43,560 cubic feet. If in six inches of soil there are 20,000 bushels per acre, then an ounce or tablespoonful of superphosphate to each bushel of soil would be at the rate of 1,250 pounds per acre. It will be seen, therefore, that the quantity we recommended was not so very small as it appears.

Root Pruning.—Amateur Fruit Grower, Salem, Mass.: Root pruning of rapidly-growing fruit trees has long been recommended as a ready means of checking luxuriant growth and the development of fruit spurs and buds, but we much prefer summer pinching or heading back the young shoots for securing the same results. In practicing the pinching off of the ends of luxuriant shoots we have our work in plain sight and can see just what we are doing, but in root pruning it is often a stab in the dark, and roots are severed which it would have been better for the tree had they remained intact.

Chloride of Potassium. — Thomas H. Strain, Brooke Co., West Virginia: Chloride of potassium is a substance made by the combustion of potassium in chlorine gas and by other processes. It is also found in "sylvine" in the crater of Mount Vesuvius, as also in the salt-beds of Stassfurt and Magdeburg, Germany. It is more soluble in water than common salt, one part dissolving in about three parts of water. It may probably be obtained of any importing druggist in the large cities.

Prune Culture.—Grocer, New York City: It may appear a little strange to you that more prunes are not raised in this country, while we import almost a hundred million pounds of this fruit in a dried form annually. The reason why the majority of the fruit growers and farmers of the Eastern States neglect the prunes and plums is that there is a small beetle known as the plum curculio which attacks the fruit as soon as it is as large as a small pea, and continues as long as there is one left on the tree. Many preventives have been suggested and tried, and while some are effective the cost of application is usually more than the fruit is worth when mature. There are a few localities in our Northern as well as in the Pacific States where this insect still permits of the cultivation of plums and prunes, but how long these will remain free is a question to be answered in the future, and it may be far or near. The curculio does not thrive in Europe while plums do, hence the advantage of our cis-Atlantic cousins.

Shading Greenhouse.—Florist, Brooklyn, N. Y.: We do not approve of using caustic-lime for applying to the glass of greenhouses for the purpose of shading the plants, because the lime is injurious to the paint and putty, and by many repetitions will make the glass exceedingly brittle. The cheapest and best material we have ever used for this purpose is the common calcimine to be had at any grocery store at a few cents per pound. Mix with hot water and apply in the morning of a clear day and you will have a shading that will remain good nearly or quite all summer, and one that will not injure the paint, putty, or glass. It may be spread evenly and as thin or thick as you may desire. Hot water will remove the calcimine if necessary to clean the glass before the shading is washed off by rains.

Barren Filbert.—Anxious, Montclair, N. J.: You want to know why your filbert tree which seems to bloom freely or is well furnished with catkins in winter fails to bear any considerable amount of nuts. The failure is due to scarcity of pollen; the staminate flowers or catkins which are always formed in the autumn, being exposed to the changeable temperature of winter are so weakened by it that they produce little or no pollen in spring when the minute pistillate flowers protrude from the buds to receive it. Where there is a large number of filbert trees in a garden the staminate flowers on some specimens are likely to escape injury and these will supply pollen for a number of specimens. When we find that the staminate flowers on our foreign varieties of the filbert have been injured in winter we go to the wood or old hedge rows and gather branches of the wild hazel, well supplied with sound catkins, and hang these in the tops of the cultivated trees just at the time the pistillate flowers appear, thereby securing a full crop of nuts by artificial fertilization.

Dodder on Alfalfa.—Ranchman, Denver, Col.: The small turning plant which you saw in the alfalfa fields in California is known as dodder, a kind of semi-parasite, which seems to follow the lucern or alfalfa plant to all parts of the world. It is a great pest not only in alfalfa fields but it sometimes attacks other species of clover. If it has not already appeared in Colorado it will probably do so before many years, unless your farmers and ranchmen are very careful in purchasing alfalfa seed for sowing. There is no practical way of getting rid of this pest except to plow up the alfalfa and use the land for a few years for some crop requiring frequent cultivation during the summer.

Hedging.—I. N. F. Graham, Preston Co., W. Va.: To give full information in regard to the raising, planting, and pruning of the various kinds of hedge planted from the seed until large enough to form a barrier against stock would require far more space than we can give to the subject. There are several works of considerable size published which treat of hedges exclusively, and yet we are inclined to think that none of these volumes are quite complete in the way of information which some persons might desire. Hedges for turning stock are not now in much demand because barbed wire makes a cheaper fence, and can be erected in a few days instead of waiting years for hedge plants to grow.

Grape Juice.—J. T. Roessler, Greenville Co., S. C.: Unfermented grape juice may be preserved by heating to the boiling point, then pour it into warm glass bottles or jars and immediately seal up, as generally practiced in preserving fresh fruits and vegetables. The heat will of course change the flavor somewhat, but no more than it does other articles preserved in hermetically-sealed jars and bottles. Grape juice may also be condensed, or boiled down as it is termed with cider, and then kept in bottles, and when wanted for use dilute with pure water if it is desirable to restore its normal density. Condensed fresh grape juice, when properly diluted, makes an excellent and refreshing summer drink, and a good temperance beverage at all seasons.

Sowing Locust Seed.—B. F. Reeve, Suffolk Co., N. Y.: The usual practice when it is desirable to change an oak forest into one of locust is to sow the seed broadcast as soon as the oaks are cut down and the timber hauled away. Many acres of Long Island forests have been changed in this way, but to insure a greater number of the seed growing it is better to rake off the leaves in small patches during the autumn, then scatter a few seeds on the bare ground and rake the leaves over them. This will not take much time and the seeds will be placed in a better position for taking root when they sprout in spring. The seedlings will require some thinning out if they are likely to crowd when of some years' growth. In starting a nursery of fruit trees you should consult such works as Fuller's "Propagation of Plants" and "Barry's Fruit Garden."

Snakes versus Moles and Rats. — J. W. Porter writes us: "I would suggest to Mr. A. S. Fuller, of New Jersey, that he try the common garter snake. Two or three of these troublers of Mother Eve will trouble the moles that annoy him until they, too, will be driven from the garden. I have seen this tried and with good results. The Middlesex cemetery was overrun with moles, not a grass plat escaped; a few snakes were allowed to remain in the grounds and in a very short time the moles disappeared. An acquaintance of mine had several apple trees girdled, a few snakes were introduced, in a short time the mice were destroyed. I have known farmers in Kentucky pay fifty cents apiece for young black snakes, preferring them to cats as

mousers in their corn cribs—his snakeship worming his way through the corn not only destroyed the old rats and mice, but the young ones in the nests." Mr. Fuller agrees with Mr. Porter fully, and says, "Were it not for the natural or hereditary antipathy to snakes not one would ever be killed on my grounds, and as it is I let some one else do it. Of course, if the harmless snakes were not killed no woman would ever take a walk through my garden, and for this reason I am obliged to kill 'the innocents,' or else debar myself from all home associations with the fair sex in garden and grounds."

Farming with Irrigation. — New Mexico has 3,085 farms that are irrigated, out of a total number of 4,174, not including those of the Pueblo Indians. This is exclusive of irrigated gardens under three acres in extent. It is not one-tenth of one per cent of the Territory's area. A special census bulletin, prepared by F. H. Newell, thus compares New Mexico with its neighbor of the arid region, the present water supply in both Territories being about all utilized:

ITEMS.	*Arizona.*	*New Mex.*
Total irrigated acreage in crop	65,821	91,745
Total number of irrigators	1,075	3,085
Average size of irrigated farms, in acres	61	30
Average size of irrigated farms of 160 acres and upward, in acres	287	312
Per cent of acreage of irrigated farms of 160 acres and upward to total acreage irrigated	34	21
Average size of irrigated farms under 160 acres, in acres	43	24
Average first cost of water right per acre	$ 7.07	$ 5.58
Average annual cost of water per acre	1.55	1.54
Average first cost of cultivation per acre	8.60	11.71
Average present value of irrigated land, including buildings, etc., per acre	48.68	50.98
Average annual value of products per acre	13.92	12.80

Rubber Cement.—Lumberman, Saginaw, Mich,: The difficulty you have found in making a good rubber cement is due to the impurity of the rubber employed, for that obtained from pieces of old boots and shoes will not answer the purpose, because it cannot be readily dissolved either in pure benzine, or bisulphide of carbon. If you can obtain the pure article as imported you will experience no great difficulty in making an excellent rubber cement as follows: Take four ounces of the rubber and one-eighth of an ounce of powdered asphaltum and put all in a strong tin can adding six times the quantity of pure benzine. After standing four or five days, stir with a stick adding more benzine if necessary to reduce to the consistency of honey, and the article will be ready for use without heat. Never use this cement near the fire or with a lamp near it for fear of an explosion.

Specimens of Wood.—L. L. Jessup, Rockland Co., N. Y.: The method pursued in the preparation of specimens of wood in the great collection in the American Museum of this city is one of the best as yet devised, either for a public or private collection. It is not necessary, however, in preparing specimens for a private collection to have them as large as those in the museum. A short section of a large tree cut V shaped from center to the outside, retaining the bark on the broad edge, will answer every purpose. One side of the V may be planed smooth and coated with shellac varnish, and the other left in its natural state. Specimens a foot long will be more convenient than larger. "Fuller's Practical Forestry" will be a handy and trustworthy guide in making a collection of woods of the United States.

Grass Among Ferns.—Peter Z. Bebe, Cowlitz Co., Wash.: The wild ferns or brakes which grow four or five feet high in your region of country will crowd and smother out any and all of the cultivated kinds of grasses, and we doubt if you could succeed in making any of them grow until the ferns are destroyed. You might try a small plat with orchard grass, which is one of the most vigorous of the cultivated species, but we are inclined to think that you will have to either abandon the land or kill out the ferns before it will be of much value for pasture.

Best Manure for Onions.—A correspondent in Western New York calls our attention to the following extract from a standard authority on gardening written over fifty years ago, and asks for further light on the subject: "No manure suits onions better than bullocks' blood previously prepared by mixture with compost of lime and earth for a year." It is a very old practice in England to take sods or earth of any kind and mix a bushel of lime with eight or ten bushels of earth and let it lie in a pile four or five feet high and three or four feet wide for a year or till the sod or other organic matter is decayed. Blood, or flesh, or fish mixed with such a compost would induce a more rapid decay; and as these substances are exceedingly rich in nitrogen their decay would furnish nitrates that are now known to be the most active and available form of nitrogen. When nitrate of soda cannot be obtained the above plan would furnish it,—or at any rate it would furnish nitrate of lime, which is equally good.

Broom Sedge and Lespedeza.—Farmer, Selma, Ala.: We do not know of any practical way of destroying the broom sedge in your Japan clover or lespedeza pasture except by breaking up and after the sedge is killed out reseeding with lespedeza seed. True, you might have the plants of sedge cut out with a sharp hoe or spade, but this would be a rather expensive operation on an eighty-acre field, especially if the sedge plants are abundant. If salt is plentiful and cheap you might kill the sedge with salt or by burning with sulphuric acid, but you are in a better position for determining the cheapest and best mode of destroying such a pest than any one else.

Plants by Mail.—Wesley Clowes, Hancock Co., Ill., asks us to suggest to nurserymen and florists who send live plants by mail to people living in country places, and who sometimes do not go to the postoffice oftener than once a week, that they drop a postal card a few days in advance, telling on what day the plants will be sent. Last year he had two hundred strawberry plants and half a dozen gooseberry plants that he did not get till fourteen days after they were mailed. He opened the bunches and buried them four days before planting. One bunch was overlooked for two weeks and was discovered by the heaving up of the soil that was above. These were planted beside the others, and made most vigorous growth. One hundred and eighty strawberry plants out of the two hundred lived and did well, and four out of the goosebery plants lived. This shows that plants can be sent safely by mail. Mr. Clowes' suggestion about notifying in advance is a good one.

Burning Weeds for Manure.—A large farmer in the winter-wheat section of Illinois writes us that last year he had a ten-acre field of oats that he intended to plow immediately after harvest and sow to wheat in the fall. But, owing to a severe drouth, it was impossible to plow the land. The land was covered with a rank growth of weeds. He cut the weeds, and, when dry, burnt them on the land. He then cut up the land thoroughly with a Disc Harrow and drilled in the wheat. "At this time," he writes, "I never had a more promising show for wheat." He attributes this to the ashes, and asks our opinion whether we cannot raise buckwheat or millet and burn the crop on the ground to advantage. This is decidedly contrary to our experience. In burning we lose the most costly ingredient of plant food, nitrogen. It is quite possible, nevertheless, that burning may give a better crop the first year than plowing under, simply because the nitrogen has to be converted into nitrates before the plants can use it, and this takes time.

Fertilizers for Egg Plants. — Sidney Ashley, Manatee Co., Fla., writes us: "Will you be so kind as to tell me what fertilizers I can use to make egg plants grow on light, sandy soil? I can grow good tomatoes and beans, but not egg plants." Egg plants require much more manure than tomatoes or beans. We have used with success 400 pounds per acre each of superphosphate and nitrate of soda. If you cannot get the nitrate, use any good high-grade fertilizers at the rate of 1,500 to 2,000 pounds per acre.

Moths on Furs.—Mrs. J. S., Sussex Co., N. J.: As the season comes around for laying aside furs, robes, woolen, and similar garments, there is often great concern as to what shall be done with them in order to prevent destruction by moths and beetles during the summer months. Gum camphor, carbolic acid, and soap, cedar sheets, sassafras chips and twigs, besides many patented moth preventives are in great demand and all of them are about as useless as they are unnecessary. Going back to the insects themselves for information we learn that these species which attack furs, skins and wool cannot and will not eat nor bore through a piece of common cotton sheeting, consequently, all that is necessary to preserve the most costly fur or garment is to store it in a cotton bag. The articles to be so preserved should be first hung upon a line, the dust beaten out with any insect eggs or larvæ that may be hidden in them, then roll up the article, slip it into a bag and hang up in a dark room or closet. We think this has been given before in The Basket, but it is worth repeating.

Milk-Mirror. — L. H., Nashville, Tenn.: The entire scale should be reduced from four score to four—perfect, good, fair and bad escutcheons—for all practical purposes. The first, that which covers the greatest space on the udder, thighs, belly and perineum; second, that which is spread over a very large surface; third, that which covers a fair proportion of the udder and lower perineum; fourth, that insignificant reversion of hair. These hold good relatively with bulls. Flandrines, selvages, demijohns, bicorns, etc., etc., do sound perplexing, and they mystify. True science and true art simplify, make plain and beautify. Form, quality and excellence in the milk pail test, butter test, cheese test and meat test prove much more satisfactory. No mirrors, however good, can reflect all excellence in one poor cow.

Reviving Dried Trees. — Subscriber, Lamoine, Maine: When woody plants, such as trees and shrubs, have become very dry in transit from the nursery they may often be revived by burying them entire in moist soil. This is far better than planting and then giving water for it is almost impossible to keep the stems moist when exposed to the air and drying wind, but if the bundles are opened and the plants laid in trenches, or in any way so that all parts can be covered up with moist soil, they are almost certain to revive if there is a spark of life left in them when so buried. They should be examined from time to time but not lifted out until the buds begin to swell, then gently raise the tops exposing only a few branches the first day, then a day or two later a little more or all of the plant except the root. Select a cloudy or rainy day for taking out and planting, always pruning away as much of the top as can be spared. Many a shrub and tree which would be pronounced dead by a casual observer may be revived as we have described.

Damage by Frost.—An investigation has been made of the effects of frost on May 5 and 6. Telegrams have been received from State agents showing that very general damage has resulted to strawberries and early vegetables; some injury to grapes and cherries, and peaches to some extent. In the East and North it was too early to injure apples and pears; in the Ohio valley it is thought it may cause dropping of growing fruit. The fruit belt of Western Michigan is said to have received little injury, though the damage has been serious, especially to small fruits and vegetables in other parts of Michigan. Nearly all unite in saying that no injury to the growing crops has occurred. A brisk wind and dry air favored the New Jersey orchards, and the loss of peaches and apples will not be so serious as was feared. The Maryland agent reports loss of strawberries and early vegetables with no injury to grain, and none to apples, peaches, or plums is mentioned. The damage to the peach belt is apparently not so serious as was at first reported.

Rough-Coated Animals in Spring.—Frequent inquiries reach us in reference to the bad condition of young stock in the spring. As a rule, bad management is at the bottom of the difficulty. Neglect is the offspring of laziness, and a bad manager of any business, as it squanders values everywhere. With the farmer this blights the hopes in young stock. A valuable animal is often damaged irremediably, or destroyed by neglect. The injury is not simply to the individual animal, but its evil is perpetuated throughout generations. By neglect the Hambletonians could never have achieved their renown; nor could the Thoroughbreds, the Shorthorns, the Jerseys, the Holsteins, the Percherons, or any other breed of valuable domestic animals. No matter how pure and valuable the progenitors, neglect dwarfs, cripples, and ruins the progeny. Good care, good management, good feeding, are all indispensable to successful breeding in rearing of all domestic animals.

AMERICAN AGRICULTURIST
FOUNDED IN 1842

JUNE, 1891.

Statistics and Agriculture.

A marked feature of advancing civilization is the increasing importance and value of statistics. This is especially true of agriculture. The development and the great changes now going on in the farming world make statistics of production, movement and consumption of grave consequence. But this data must be both timely and accurate to be of the most usefulness. Our present system of crop reports, including the government service, is necessarily a piece of colossal guesswork, whose merit depends largely upon the judgment of the official or editor who prepares the returns for publication. Even the census figures of agriculture are nearly a year old when collected and almost two years old when published. There are a few conspicuous exceptions, notably the information promptly furnished in the census bulletins on viticulture, truck-farming, and tobacco.

The wise suggestion is made that this delay could be partly avoided and accuracy insured by establishing a permanent census bureau on a small scale. It might embrace the entire statistical work of the government, but should be made an adjunct of the Department of Agriculture. With such a headship, and a sufficient appropriation, it would be feasible to arrange for an annual farm census of numbers, acres, yields and quality. It is true that the plan would cost a large sum, but if conducted with energy the data would not only be accurate but they would be prompt. The savings to the public, and especially to farmers, would be many times the cost of such a system.

It is true that the present statistician of the United States Department of Agriculture regards this plan as impractical because both slow and expensive. With due deference to this authority, however, both objections can be removed. The matter of expense is of least consequence because it would be a paying investment. Nor need such work be slow. The quickness with which census returns of population were collected, and published, shows the possibilities of such work. A properly organized and permanent system could collect agricultural statistics far more quickly and accurately than has ever yet been done.

The AMERICAN AGRICULTURIST would be happy to contract with the government to perform this service, so far as agricultural data goes, on a basis that should satisfy the most exacting. Private enterprise could doubtless do this work more cheaply and quite as efficiently as an official bureau, but a task of this magnitude and importance is of course a proper function of government.

The present system of government crop reports is good so far as it goes. But its inability to accurately gauge the situation under extraordinary conditions is plainly manifest. The great underestimate of the 1890 cotton crop is a case in point. President Walker, superintendent of the tenth census, has pointed out the great waste in current methods of statistical inquiry, which would be overcome in large measure by a well-equipped, permanently-organized, and liberally-supported bureau.

Co-operative Farming.

The low price at which many manufactured articles are now to be bought is much commented upon. It is usually due to economy in production, brought about either by the use of improved machinery or the manufacture of enormous quantities. Yet, in spite of this reduction in the price of production, the wages paid to labor on such goods are in many cases fully as high as when the articles sold for from fifty to one hundred per cent more than at present.

We find this economy and cheapness of production in every line of industry except farming. Since the expansion of the wheat area by the invention of labor-saving machinery there has been but little reduction in the cost of growing staple crops. The opinion is held by the great mass of farmers that the cost of producing crops cannot be materially lessened. To some extent this is true. There are certain fixed expenses, such as interest, that remain about the same whether ten acres or one hundred acres are cultivated. Yet it is possible for farmers to accomplish a good deal in reducing expenses through co-operation in doing their work as well as in buying their supplies.

A movement is already on foot, in a quiet way, in Iowa for farms devoted to staple crops to be thrown into commons and worked on as large a scale as possible. The big cattle-feeding establishments are a familiar instance of an attempt to cheapen the cost of production and increase the profits of the beef business. Flocks of sheep are growing larger, and instead of a number of farms, each having a small flock which has to be fenced in, the practice is becoming more common of having them herded all together, even in the Eastern and Central States, where there is no public range as in the far West.

The most intelligent and far-sighted farmers and students of the situation see in these scattered efforts the beginning of what may in a few years become a widespread concentration and co-operation in farm production. The fact that this idea can be carried out without interfering with the individuality or independent life of the farmer also commends it to his favor. Community life, so distasteful to many, is not essential to this improvement. It only needs a few profitable experiences of co-operative farming to attract and lead to its general adoption.

The fact that the agricultural land throughout the country has been in many respects leveled in value by the late depression and by the railroad development makes it more necessary than ever for farmers of the East and South to unite in producing on a large scale if they would meet the competition of their Western brethren, who are practicing the same tactics.

Nor do the relative merits of intensive vs. extensive farming prevent this co-operation. If the grower of one or two acres of vegetables gets great yields and good profits, might he not do still better if the expense of cartage, of fertilizers, of irrigation, of everything except day labor, were reduced by unison with the adjoining market gardeners? But in many cases an equally great saving can be made by marketing a large quantity of uniform product true to grade. Moreover, certain improved methods and machinery that are beyond the reach of an individual farmer could be utilized at a profit by a syndicate.

All manufacturing is tending in the direction of larger plants, reduced expenses, increased product, lower prices for output, and, we may truly add, increased profits. There is a wide field for the application of the same principle to agriculture. That this policy will pay admits of no question. Moreover, its adaptability to the peculiar circumstances and methods of different sections of the country is more practicable than may at first appear.

Large Farms With Small Capital.

Such a title as the above savors upon the face of it of "lots of money, with little work," or "wealth for all"; but the meaning intended is far different. We once knew a young farmer who invested his all in a farm, paid his hard earnings, and shouldered the rest in mortgages. There was not a dollar to buy a team of horses, or the other necessary stock, and the many implements that every farmer must have. In his anxiety to own a large farm, he came into the possession of an "elephant," and buried his capital in the earth as securely as Captain Kidd has done.

A farmer should always know that his profits come from his labor upon land, and not from the land spontaneously, and, therefore, there needs to be harmony between the amount of capital invested in land and that put into the working force, the really productive portion of the business. We wish farmers who contemplate buying a large farm, much beyond their means, could read the history of the failures among the manufacturing world. If farmers could fail as evidently, as flatly as their city brothers, it might work good results in the proverbially slack profession of agriculture. If a person is poor, the buying of a large farm will not in itself make him rich. Thorough culture on capital owned is safe and sure. Add more acres as they can be well cared for.

Lack of capital is the great drawback with the majority of farmers. Even if a farmer makes money and gets his farm paid for, the common practice in the Eastern and Central States at least is to invest farm profits in outside schemes, keeping the farm business almost as cramped as ever for capital. There is, of course, a limit beyond which the prudent farmer will not go in putting even his profits back into the farm. But the great majority of farmers never reach this limit. This scrimping policy—taking every dollar possible out of the farm and spending the least in return—has done much to run down the fertility of New England hill farms. On the other hand, the desire to do more business than one's capital or credit will permit has brought hardship to many farmers in every part of the Continent. The mortgage is like fire—a friend and source of power and energy when under control, but a relentless foe and overpowering weight when beyond one's abilities to meet it.

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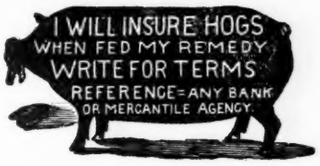

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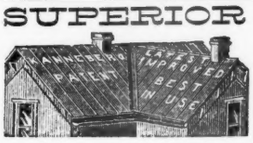

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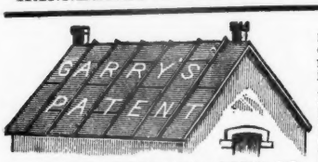

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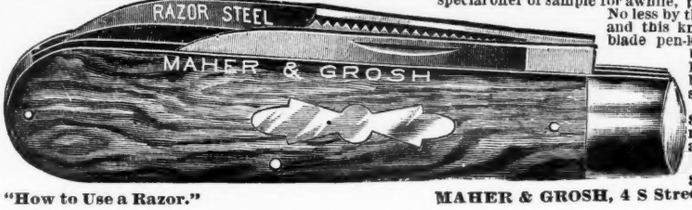

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ANIMAL AILMENTS.

Sheep Ticks.

DR. COOPER CURTICE, VETERINARIAN U. S. DEPT. OF AGRICULTURE.

The sheep-tick or louse-fly is the most common external parasite of sheep in the Eastern United States, and there is a probability that it is productive of losses approaching, if not equaling, those due to scab. For, while farmers recognize its presence, and realize that it harms their sheep, few of them are ready to incur the cost and trouble of exterminating it and thus prevent its annoyance and the entailed animal loss, while against scab, which effects great losses in a short time, every prosperous flockmaster proceeds vigorously. The difference between the losses caused by ticks and by scab depends, in part, upon the mechanical injury each inflicts, and in part upon the rate of increase of each. Ticks thrust their bills into the sheep and abstract blood. Scab-mites burrow into the skin for their food and cause extensive sores. Ticks reproduce slowly, scab-mites very rapidly. It is only when the ticks have become very numerous through neglect that the itching and the loss of blood they cause forces itself upon the attention of the owner, and it is then several months past the time when effective preventive and remedial measures should have been taken. In the accompanying illustrations Fig. 1 shows an adult sheep-tick, Fig. 2, the puparium, Fig. 3, the proboscis, highly magnified, Fig. 4, the foot, also highly magnified, and Fig. 5, the tick and its puparium, natural size. The loss and annoyance produced by the sheep-tick is unpardonable in the flockmaster, for they may be avoided. The pests can be killed and the sheep easily prevented from acquiring more; because first, the tick is born, lives, and dies in the fleece; second, ticks only get on sheep from other sheep; and third, the tick is easily killed by sheep dips. The life history of the tick and the experience of man in killing it thus prove that the extermination of the parasite is in the hands of the flockmaster. The cost of extermination is, when measured by the annual loss caused, comparatively slight, but is at its maximum when each sheep-owner undertakes to work alone, and at its minimum when prosecuted under State and governmental supervision. In the former case every clean flock is constantly menaced by neighborhood flocks; but in the latter the public compels, through its trained servants, all sheep to be cleansed, and quarantines flocks from foreign regions until they have been made clean. In one case the source of invasion remains just beyond the line fence; in the other it is put beyond the boundaries of the State or country, as the case may be.

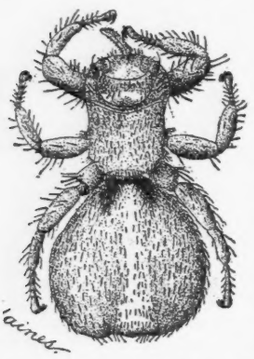

FIG. 1. FULL-GROWN INSECT.

FIG. 2. PUPARIUM.

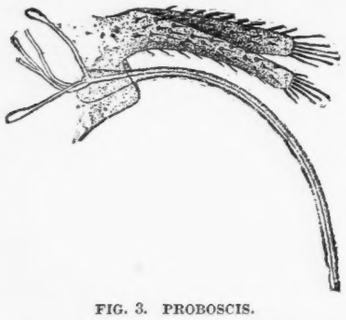

FIG. 3. PROBOSCIS.

FIG. 4. FOOT.

FIG. 5. NAT. SIZE.

To free the flocks effectually from all external parasites the dipping should be thorough, each step being taken with extreme care; rather overdo it than leave a single insect alive. Dip in prescribed baths; after ten days examine the sheep, and if any ticks are found alive dip again, making sure that all the ingredients of the bath are pure. While the young in the pupa cases may not be killed by the first bath and emerge, the second bath will catch them. Experiment goes to show that they will not survive the first bath.

Dip just after shearing, for then the wool will not be harmed, the shorn animals are easily handled, and the work will be the least. Dip each animal from one to two minutes, and submerge the head just before finishing with it. Dip every one of them. Additional care and effective dipping once is one-half cheaper than two dippings carelessly conducted.

For sheep-ticks, lice, and scab insects use scab dips. These dips kill all three, and cost but little if any more than a dip which would kill ticks alone. Use warm baths whatever be the season; baths whose temperature is about 110° F., and never below that. The best dips, because the most effective and cheapest, are the sulphur-and-tobacco dip and the sulphur-and-lime dip. The latter is the cheaper, but injures staple when it is long, and is only used on shorn animals.

Australian Dip.— Take of tobacco and sulphur flowers one pound each to every five gallons of water. Use good leaf tobacco, and steep it in the water at least five hours. Squeeze out all of the liquor from the leaves when removed. For this a wringer is serviceable. Mix the sulphur with some of the water until it is of creamy consistency, then add to the remainder. Keep the mixture stirred while dipping.

Sulphur-and-Lime Dip.—Take of sulphur flowers twenty-five pounds and fresh slaked lime twenty pounds to every one hundred gallons of water. Mix and stir while boiling for twenty minutes. Add a little water and replace that lost by evaporation and stir while dipping, to keep the mixture from settling. Keep the bath at 110°.

Allow one gallon of liquor per sheep for flocks of less than one hundred head, and one quart per head for shorn sheep, and two quarts for unshorn sheep in flocks numbering over a thousand. The full amount must, however, be learned as a matter of experience by each operator.

The kerosene emulsion dip for sheep-ticks and lice was first recommended by Mr. Joseph Harris in the AMERICAN AGRICULTURIST for October, 1889, page 490, and later by Prof. C. P. Gillette, of the Iowa Agricultural Station. Prof. Gillette's recipe is as follows:

Kerosene Emulsion. — Dissolve one-half pound common hard soap in one gallon of water by boiling. While boiling hot remove from the fire and immediately add two gallons of kerosene, and agitate the whole briskly for a few moments, when a creamy, frothy mass will be formed. The emulsifying is best done with a small force-pump by pumping the material back into the vessel that contains it. The emulsion may be diluted by adding water, and while Prof. Gillette used a liquor containing eight per cent kerosene, he recommends a five per cent emulsion. Caution: Use good kerosene, and be sure no free kerosene floats on top of the bath. Eighty gallons sufficed for fifty-eight animals in June before shearing, at a cost of $1.11. This dip is a new one, and has not stood the test of time as the two given above have. Its efficacy against scab is conjectured. Time and experiment alone can prove whether it is to become their rival in efficiency as it certainly is in cheapness and ease of application. It may prove useful in dipping sheep in full wool. Having rid the flock of ticks keep them free. Do not pasture other flocks with them. Do not let the ticks get from the ground, where the shearers have been, on to the sheep; keep the sheep away for two weeks. Do not let stray sheep mingle with yours. Ask your neighbor to dip his sheep, showing him the advantages; do what you can to secure State aid for the suppression of external parasites. It will pay.

Practical Prescriptions.

Fits or Epilepsy.—Barney Loverty, Beaver Co., Pa., has an eight-year-old mare that falls in harness on the right side. Having happened five or six times, it is the result of some nervous trouble, and unless the cause can be removed the serious malady may continue. These spells are liable to happen in the most dangerous places in road or field. Such animals should not be bred, as a predisposition may occur in the offspring. Epilepsy is attended with spasms, more or less violent.

Scratches.—Max Neidernefer, Tolland Co., Ct., has a horse that has had scratches, and after a cure they again come back. The same conditions that caused scratches will, of course, again produce them. The stable floor must be kept clean and dry. Wash the heels of the horse every day with soap and water, and apply a solution of sulphate of copper ten grains to an ounce of water. This should be applied with a sponge or piece of flannel. If spattered into the eyes it will smart. It is poison and all active remedies should be kept where children or animals cannot be poisoned by them.

A Jumping Cow.—R. L. Gilman, Essex Co., Mass., has a cow that "will jump anything we can put up." "Send her to the greatest show on earth," or to the shambles. But if more profitable, sell her to any traveling showman or to a New York museum. If, however, you wish to keep so remarkable an animal, put a strong halter on her, and bring the end between the fore legs and fasten it to a cirsingle around the body. This, if short and strong, will prevent her jumping. The condition of a high jump is a free head and a strong inclination; curb both. Try the martingale, and report the maneuvers of your jumping cow.

Trembles.—H. J. Shallenberger, Juniata Co., Pa., had a three-year-old Jersey cow that had the trembles for six or seven days. The trembles is supposed to be caused by cows eating a plant called *Rhus toxicodendron* — trailing oak, poison ivy. This plant produces violent inflammation of the skin and eyes, and, eaten by animals, it has a similar effect upon them, producing the "trembles." The milk of cows thus poisoned, unless boiled, produces in children diarrhea, vomiting and paralysis. It is both an acrid and a poisonous narcotic. The sensations are of burning, and with twitchings in children, and doubtless the same effect is produced in animals. The trembling is a symptom of grave inflammation also.

Cow Dying Head Down Hill. — Frank Crathorne, Pottawatomie Co., Kan., lost a cow two months before calving by lying with her head down on a side hill. Undoubtedly, the cow was suffocated. The natural distention of the abdomen by the fetus and a full stomach pressing upon the lungs in this unusual position caused the oppression of the lungs. The oppressed breathing of cows lying naturally chewing the cud after feeding freely on young clover must have been observed by the most casual observer. It is the excessive ingestion of young clover and its rapid fermentation that destroys so many cattle soon after being turned into, or having broken into, young and thrifty clover fields, from the hoven.

Quittor. — Samuel S. Birchus, Gloucester Co., N. J., has a horse that has a running sore on the coffin-joint, and desires a remedy. The case is probably a quittor. This is a chronic or old abscess. Quittors form numerous openings from several sinuses or channels formed by matter or pus seeking an opening. This is a serious and tedious difficulty. To cure, cleanse the part by syringing with warm water first, and following with a solution of one dram of chloride of zinc in a pint of water daily. This may be increased from one to two drams of the zinc. The syringe should be of vulcanized rubber and of not less than two ounces. The cleansing should be thorough, but the zinc may be only properly used once at each dressing.

Ewe and Twin Lambs Weak in Legs.—T. C. Corbonear, Newfoundland, had a ewe that yeaned two lambs. One died in the fold, the other ran out in the field on a fine day, but died with cramps. In the absence of any further information but that the ewe was thin, weak and feeble and prone to lie down, it is difficult to assign any other cause than want of proper nourishment of the ewe. Animals bearing young require extra nourishment, as well before parturition as after when suckling. This ewe had twins and should have had special feeding, roots, oats and hay. Ground oats and corn, in the proportion of three bushels of oats to

one of corn, makes a good feed with roots. To this ration a handful of coarsely ground malt put into a thin slop of the ground grains, over which boiling hot water has been poured, and cool for several hours till lukewarm, is excellent.

Parturient Fever Probably. — Prince Briggs, Buncombe Co., N. C., has recently lost a valuable cow soon after calving. The neighbors attribute the death to "dropping of the calf bag," but Mr. B. does not refer to the inversion of the uterus, which is so remarkable that he would doubtless have noticed it. We again, specially request a statement of cases with such fullness as to enable us to form a diagnosis. Parturient fever, or parturient septicæmia, may have been the cause of death of your cow. This is the introduction of a putrid substance into the blood, and is very infectious, and kills in from one day to a week. Cows dying from this cause should be buried, and the litter about the sick animal should be burned and the stall fumigated with burning sulphur.

Periodical Sickness of a Mare in Foal.—D. G. Piper, Indiana Co., Pa., reports an unusual case of a mare becoming sick every nine days during the last four or five months of gestation. At the full period the foal when born had the umbilical cord so tightly wound round the neck that the proper nutrition was so nearly cut off as to dwarf the fetus. Though it lived, it never became larger than a puny pony, while the parents were large, robust animals. The mare never bred after. This latter was in no way connected with the umbilical trouble, though the illness every nine days was the result of sympathy. The natural periods of heat in the mare occur at about this period of nine days. But the failure to breed after this, in the mare referred to, probably was the result of some other obstacle.

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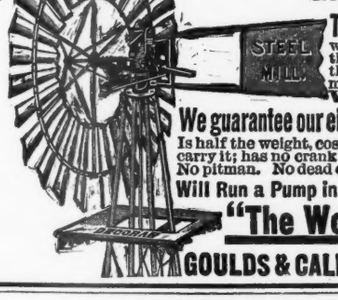

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ISSUES OF THE DAY.

Taxation of Real Estate Mortgage Loans.

A. W. BEARD.

It goes without saying that a very large portion of the personal property subject to taxation by the laws of the States escapes taxation; in fact, a very much larger portion escapes than is scooped in by the assessors. The expression "scooped in" is characteristic of the way the work is done, mostly guessed at and estimated by the assessors in their dooming process. The difficulty is not so much in the theory of the law, which defines personal property subject to taxation, as in the practice of finding out who is in possession of personal property and upon whom the taxes shall be assessed. This was illustrated in Massachusetts by the amount of loans secured by real estate mortgage taxed in 1880, when such loans were taxable: the whole amount of taxable loans secured by mortgage on real estate at that time was over three hundred millions of dollars, but the assessors' returns for that year show that in the entire State the amount of such loans taxed was only sixty-one millions of dollars,—in the year previous, 1879, a little over fifty-eight millions of dollars.

I do not propose in this article to suggest any remedy for the inability, or the indisposition, of the assessors to gain better knowledge of the ownership of personal property, but to confine myself to the reasons why the present law taxing mortgaged real estate should be maintained and applied in other States.

The law provides that the mortgagee shall be assessed for his interest in such real estate in the place where the land lies, and that "the mortgagor shall be assessed only for the value of said real estate after deducting the assessed value of all such mortgagee's interest therein," and that "mortgagors and mortgagees, for the purposes of taxation, shall be deemed joint owners until the mortgagee takes possession"; and exempts from personal property subject to taxation "any loan on mortgage of real estate taxable as real estate, except the excess of such loan above the assessed value of the mortgaged real estate."

The present law provides for the taxation of all real estate once, and considers the note representing the amount of the mortgage as evidence of the amount of the mortgagee's ownership in the mortgaged real estate. The note is also in effect a part of the deed, for without the note the mortgage deed would be without force.

The law provides that the mortgagor and mortgagee shall each be taxed in accordance with their respective ownership, but leaves it with the parties themselves to agree whether one or both shall pay the whole tax on their joint ownership.

There is no real estate created by the mortgage. Selling or mortgaging does not of itself increase the value. If an unconditional sale of so much of the estate as is represented by the amount of the mortgage should be made, no one would think of taxing the deed of the part sold an additional tax equal to that assessed on the land before the sale; and the mortgage is only a deed with a condition. What justice or reason is there in taxing a deed because of a condition therewith?

If the two parties, mortgagor and mortgagee, were joint owners of the real estate as copartners, no one would claim that either party's interest should be taxed twice.

Suppose John Smith and Richard Roe were joint owners of a farm worth $20,000 which they carried on together; they were jointly taxed on the assessed value of the farm; after a few years they disagree as to the management, as to the value of their respective services, etc., and Smith buys Roe's half of the farm, giving Roe his note for $10,000, with interest, and a mortgage on the whole farm as security for the payment of the note; Smith also hires Roe as foreman, or in any other capacity, to labor on the farm. Both parties are still recipients of the *income* of the farm. Roe receives the interest on his note and his wages from *that income*, and Smith has the balance of the income left. The sale from Roe to Smith has not increased the value or added to the income of the farm. Why should an additional tax be placed upon the note which Roe holds, in effect doubling the tax upon the half of the farm he has sold to Smith?

Under the former law which it is now sought to restore, Roe would have been taxed on his note for $10,000 which would have been added to the valuation of the town, when, in fact, nothing has been added to the real valuation. Suppose that after two or three years of this experience, finding that there is an annual tax of $150, or thereabout, more than formerly under the joint ownership chargeable to the income of the farm, Smith sells back to Roe the half of the farm and so pays the note, and they resume their former relations as joint partners. The valuation of the town is at once reduced $10,000 and the taxation to be paid from the income of the farm accordingly reduced.

This illustration shows both the injustice and the absurdity of the former law, and it applies to all mortgaged real estate; the fact that Roe is supposed to remain in the employ of Smith does not affect the principle at issue.

It is now admitted by all who have candidly examined the subject that under the former system, which it is now sought to restore, there was double taxation: First, the tax on all the real estate; and, second, on the amount of the mortgage, which is simply a conditional investment in real estate already taxed.

It also shows that the valuation of the mortgage was entirely fictitious; that the creation or discharge of a mortgage makes no real difference in the valuation of a town or State. It is also admitted by every one having any practical knowledge on the subject that *this double taxation was borne by the borrower;* that the rate of interest had to be high enough to cover the taxes due from the lender.

It is also admitted that only a small proportion of the mortgages liable to taxation under the old system were assessed; the returns of the assessors for 1880 and 1881 show that only about $60,000,000 were taxed on this account in Massachusetts, when the amount of mortgages subject to taxation was at least $300,000,000.

The advantage of the higher rate of interest caused by the tax and paid by the borrower mostly accrued, not to the State and the cities and towns thereof, but to the dishonest lender who evaded the tax and pocketed the extra interest the tax created.

The manner of assessing personal property throughout Massachusetts is such that very little change has been made in the valuation of personal estate in consequence of the change in the law taxing mortgages. A very small reduction in the rate of interest, say one-fourth or one-third of one per cent, would compensate the borrowers for all the State and municipalities really received under the former system; that is, an average reduction of one-third of one per cent in the rate of interest on mortgaged real estate would save the community as much as is lost in taxation by the change from the old system, supposing all of the $60,000,000 taxed to be deducted from the present personal valuation of the State, but in fact not one-third of this amount has been allowed in assessment because of the change in the law.

This tax was a grievous burden for the mortgagor; it prevented the ownership of houses by those who had money enough to partly pay for a house, because the tax on the mortgage, added as it was to the rate of interest, made it cheaper to hire.

Nowhere are the benefits of exemption more apparent than among the farmers in the farming districts. Interest is a grievous burden to the farmer; his gains are small, his risk as to crops, health of stock, etc., considerable; one or two per cent in the rate of interest is a serious matter to him. The agricultural sections are comparatively more benefited by this change than the cities and manufacturing towns.

The State should encourage the ownership of homesteads by its citizens. Under the former system this tax added to the rate of interest, prevented enterprise in building and developing real estate, because this tax was so much taken from the profits or earnings of the party who built and who had to borrow money on mortgage.

The policy of the State should be to encourage legitimate enterprise in improving and adding to the value of real estate. For years the *borrowers* asked for relief; lenders did not petition for redress. Trustees who were obliged to make returns and a few honest lenders who paid their taxes without evasion, joined in the prayer for relief, but the great pressure was from the borrowers.

The legislature of 1881 passed the present law; immediately within four weeks of the time of its passage, in all money centers the rate of interest on money loaned on real estate mortgages fell from one to one and one-half per cent. The testimony is conclusive on this point; it is known of all business men.

The present law has satisfied the borrowers who asked for relief; no borrower has ever appeared before the Committee on Taxation for any change since its passage, nor has any borrower ever sent to the legislature a petition for a change; but mortgagors have invariably remonstrated against the repeal of the law relieving mortgaged real estate from double taxation. Under the present law there is no grievance or injustice to be redressed.

Still it is proposed by some to restore the old system, to again tax money loaned on mortgage of real estate. This means to add to the burden of the borrower an average tax of one and one-half per cent on the amount he owes, as it is now the condition of all mortgages that the *borrower is to pay all taxes on the real estate involved, and also all the taxes that may be assessed on the note which is secured by the mortgage.*

The effect would be to largely arrest the rapid improvement in real estate now going on, to decrease the value of buildings because of the added tax to mortgagors, to check the acquirement of homesteads by men of small means, and to again unjustly and wickedly tax men on what they owe, placing this burden on the class least able to bear it, with no corresponding benefit to the tax-paying community. All the ways of evading the former law are still open, and cannot be closed.

If the law taxing mortgages be again placed in our statutes only a small proportion would be assessed, but the rate of interest would be advanced as if *all* mortgages were assessed. The dishonest lender would again profit from the tax he evades.

The statement that the borrower does not get cheaper interest by reason of the exemption of loans secured by real estate mortgage from taxation has no foundation in fact; it is simply untrue. For ten years before 1881 the rate of interest on real estate mortgage loans averaged higher than the rate of discount for first-class business paper; since 1881 the rate of interest on real estate mortgage loans is much less than the average rate of discount on business paper. Every man who has any practical exprience in borrowing or lending knows this. Fanciful, suppositious theories cannot change the actual facts.

Real estate mortgage loans can readily be placed to-day, in Massachusetts, at from four to five per cent, and in some instances at even less than four per cent, the rate of interest depending upon the size of the loan, the margin of security, and the location of the property.

The present law has been in operation ten years. The personal valuation of the Commonwealth has not been decreased by its operation, but the real estate valuation has largely increased; and this increase is largely due to the relief afforded to the improver of real estate by the reduction of interest in consequence of the exemption of real estate mortgage loans from taxation. No hardship is involved to State, county, city or town by the present wise policy.

Over and above all other considerations, justice should prevail and the principles of equal taxation should be maintained. The present law was a step forward in the way of tax reform. The Commonwealth will take no backward step after such favorable results however slow it may be in further forward movement. This lesson and experience, while confined to Massachusetts, applies with almost equal force to other States.

Is a Change Impending?

Simultaneous with the publication of the AMERICAN AGRICULTURIST for May, containing the article by Mr. C. Wood Davis on "The Farmer in the Impending Change," appeared the government crop report for April, in which Mr. J. R. Dodge the statistician of the United States Department of Agriculture, considers at length the permanency of agricultural production. His views are summarized as follows:

Europe has four times as many people as the United States, yet all the eastern part of the Continent has an agricultural surplus. Even Italy's exports equal her imports. The Netherlands, with only two and a half acres to each inhabitant, require only a few million dollars' worth of agricultural imports in excess of agricultural exports. France requires from foreign sources only about

seven per cent of her consumption for a population nine times as dense as ours. Great Britain feeds one-half of her people from her own soil, through the labor of one-eighth of her population.

It is an absurdity to claim that four times as much area is required to feed one person in this country as in Europe, even allowing for more liberal dietary. Moreover, half of the area of Europe could easily double its production under more general and higher cultivation.

In the United States we have not even approached the limit of agricultural production. One-third of our area is either too dry or too wet for present cultivation, awaiting irrigation or drainage. Of the other two-thirds there is much not included in farms; our farm area is not all utilized and the cultivated area may become far more productive.

Our public land is by no means all taken up. Much of the arid area is not even surveyed. With the utilization of all possibilities of irrigation, tens of millions of acres will be open for cultivation. The idea of nearing exhaustion of productive lands is based on the assumption of the necessary continuance of primitive methods, the cheapest and most superficial culture and stagnation of all rural progress, while the possibilities of further development of the public lands are lost sight of altogether.

Yet the demand for our surplus is not unlimited, Not a dollar's worth of our usual surplus will be taken except to supply an imperative demand. Any overburdening of the market instantly reduces the price, whether in cotton, tobacco, wheat or corn. In the case of meats there is opportunity for the opening of new markets, as the exportation of fresh meats was started less than fifteen years ago and is still susceptible of great extension. But nine-tenths of our aggregate production is consumed at home, and the tendency is toward decrease of the proportion exported, even though the quantity should increase.

Nor is the wheat surplus immediately exhaustible. Our farmers would gladly produce more wheat for export if it paid. Nor is wheat-growing declining in Europe, whose average crop for the past five years is 1,219 million bushels per year. The preceding five years show no larger figures, and investigations in 1873 produced a similar result. Even these figures are underestimates, the full average being 1,250 million bushels a year. The wheat area in France is remarkably uniform, while in Russia improvement in yield per acre more than compensates for the alleged reduction in area. The annual fluctuations of the crop in Russia are so wide that extreme caution should be exercised in making sweeping deductions from the record of too short a period.

Mr. Dodge believes the Indian wheat scare is nearly over. He says that little wheat may be expected to go out of India from the harvest just completed, and predicts a continuance of the decline in area and exports.

Another fallacy, the assumed decline of wheat production of the world, is disproved by the most authentic records of recent production. The average aggregate of the world's crop, including the countries concerning which either official or commercial estimates are obtainable, is about 2,122,000,000 bushels. The contributions of other countries cannot make the grand aggregate much less than 2,250,000,000, and this figure may be exceeded as the average product of the real wheat of the world for the past six years. The largest crop was in 1887, and the combined yield of that season and the following year exceeded that of the two preceding seasons by about 384 million bushels,—a sufficient cause for the reduction of prices that followed. The product of 1889 was small causing some advance. The world's crop of 1880 is figured at 2,204 million bushels.

Mr. Dodge concludes that the United States will continue to produce a surplus for export until the wheat culture of the plains shall have given place to more varied and profitable crops and increasing numbers of non-agricultural population shall require the entire crop for bread. He adds: "Farm labor is not sufficiently effective; its distribution could be more harmonious and profitable. Prices of cereals have sometimes been reduced by oversuppiy. Cotton, with a product of 22,000,000 bales in three years, a quantity greater than the production of six years prior to 1860, begins to decline in price. At the same time there is a failure to produce the sugar required, though there is cane land sufficient for an ample supply, and beet sugar lands *ad libitum*, without mentioning the possibilities of sorghum. There might be tens of millions of dollars annually coined from various fibers, large extension of fruit-growing, and introduction of many economic plants to be made the basis of new industries. The material now produced for food consumption might be put in more attractive form for market, and a large contribution levied upon the gastronomic and esthetic tastes of consumers."

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"Murray" Vehicles & Harness, also a book containing words of praise from people in all parts of the United States who have bought, tried and tested our Celebrated Buggies and Harness. Our

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Buggies and Harness have stood the severest test for years, and have to-day no competition whatever when Quality and Price is considered together. We do
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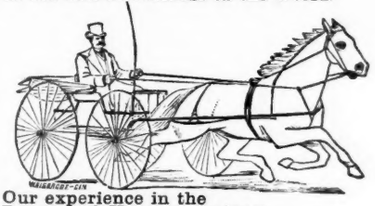
Have gained for us
a reputation second to none
in our line of business in the world.



Our experience in the
Buggy and Harness business,
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modern business methods
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not only possible, but easy for you or any other man to buy the best
Buggies and Harness,
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for one-half their
real worth and for
less than one-half
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have paid for goods
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up to the way business is
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we will hear from you
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Very kindly yours,

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Salary and Expenses paid, or Commission if preferred. Salesmen wanted. No experience needed. Address stating age.
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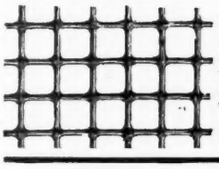

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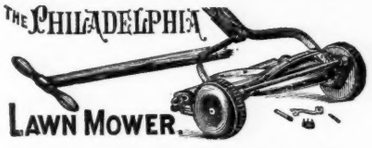

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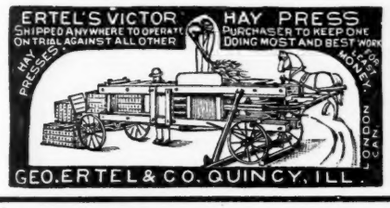
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Don't buy a common looking silver watch, when you can now obtain for the small sum of $5.00 a genuine gold plated, hunting case, full engraved watch; equal in appearance to many watches sold by retail jewelers at from $20.00 to $30.00. Fitted complete with our own special ruby jeweled, extra finely finished movement, celebrated for its perfect timekeeping qualities and superb appearance; magnificently finished, highly polished pinions, enamel dial, specially tested, adjusted and regulated so as to give perfect results as a fine time keeper. In carrying this watch you can have the credit of carrying a solid gold watch, as the plating process is got down so fine now-a-days that it is almost impossible for the ordinary observer to detect the difference. The engraving is just like that on high priced watches and comes in the very loveliest and latest patterns. Some will doubt our ability to be able to supply such a watch at this price, and to convince you that we mean just what we say, we make the following most extraordinary offer for

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Cut this out and send it with your order, and we will promptly ship the watch to you by express C.O.D. with instructions to the express agent to allow you to examine it at the express office. If on examination you are convinced that tis a bargain pay the agent $5.00 and the express charges and it is yours, otherwise you pay nothing and it will be returned at our expense. We could not afford to make such an offer as this unless we were confident that the watch will not only please you but be a surprise to you.
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Publications Acknowledged.

FROM THE EXPERIMENT STATIONS.

Publications Received—April 1 to May 1, 1891.

ALABAMA—Agricultural and Mechanical College at Auburn, third annual report, 1890, Bul. No. 23 (new series), Feb., co-operative soil tests; meteorology, Bul. No. 24 (new series), Feb., dairying and breeding; meteorology.

CALIFORNIA — Exp. Sta. at Berkeley, Bul. 92, March, notes on California olives, their adaptations and oils.

CONNECTICUT—Exp. Sta. at New Haven, third annual report, 1890; Bul. No. 106, March, Babcock's milk test, fertilizers; Bul. No. 107, April, the Connecticut species of Gymnosporangium (cedar apples); Storrs School, Exp. Sta. at Storrs, third annual report, 1890, Part I.

DELAWARE—Exp. Sta. at Newark, Bul. No. 11, January, soil and crop tests; Bul. No. 12, March, injurious insects and insecticides, spraying machinery.

INDIANA—Exp. Sta. at La Fayette, Bul. No. 34, Vol. II, Feb., sugar beets, field experiments with commercial fertilizers and manure on barley and oats, tests of vegetables; Bul. No. 35, Vol. II, March, loose smut of oats.

KENTUCKY—Exp. Sta. at Lexington, Bul. No. 32, March, strawberries, vegetables.

MASSACHUSETTS — Exp. Sta. at Amherst, eighth annual report, 1890, analyses of commercial fertilizers, March; Bul. No. 39, April, treatment of fungous diseases; Hatch Exp. Sta. at Amherst, meteorological Bul. No. 27, March; Bul. No. 12, April, report on insects.

MINNESOTA — Exp. Sta. at St. Anthony Park, biennial report, 1889-90.

NEBRASKA — Exp. Sta. at Lincoln, Bul. No. 16, April, experiments in the culture of the sugar beet in Nebraska.

NEVADA—Exp. Sta. at Reno, third annual report, 1890.

NEW YORK—Cornell Exp. Sta. at Ithaca, Bul. No. 26, March, experiences with egg plants.

OREGON—Exp. Sta. at Corvallis, Bul. No. 9, Feb., silos and silage; Bul. No. 10, April, experiments with codlin moth and with a combined fungicide and insecticide, descriptions of spraying apparatus, notes on the hop louse.

PENNSYLVANIA—Exp. Sta. at State College, Bul. No. 15, April, influence of variety and of rate of seeding on the yield of ensilage corn.

RHODE ISLAND—Exp. Sta. at Kingston, Bul. No. 9, Dec., 1890, experiments in agriculture.

SOUTH DAKOTA—Exp. Sta. at Brookings, Bul. No. 21, Feb., experiments with small grains; Bul. No. 22, March, injurious insects; Bul. No. 23, April, forest trees, fruits, and vegetables.

TEXAS—Exp. Sta. at College Station, third annual report, 1890; Bul. No. 13, Dec., 1890, value of sorghum as a feeding stuff and its effect on soil, analyses of teosinte at different states of growth, miscellaneous analyses.

UTAH—Exp. Sta. at Logan, Bul. No. 5, March, potato trials.

VERMONT—Exp. Sta. at Burlington, Bul. No. 23, March, fertilizers.

WEST VIRGINIA—Exp. Sta. at Morgantown, third annual report, 1890; Bul. No. 11, Sept., 1890, meteorological report for September, report of correspondents upon meteorology and crops for September; Bul. No. 12, Dec., 1890, the Canada thistle.

DOMINION OF CANADA — Dept. of Agriculture, reports of the officers of the Canadian experimental farms for 1890; Ontario Exp. Sta. at Guelph, Bul. No. 59, March, green fodder for swine; Bul. No. 60, March, growth and uses of rape.

UNITED STATES DEPARTMENT OF AGRICULTURE —Report of the secretary of agriculture for 1890. Office of Experiment Stations, circular No. 19, March, experiments with fertilizers on fruits and vegetables, experiment station record, Vol. II, No. 8, March; division of entomology, Bul. No. 7, the pediculi and mallophaga affecting man and the lower animals; periodical bulletin, Vol. III, No. 6, March, insect life; division of vegetable pathology, circular No. 10, treatment of nursery stock for leaf blight and powdery mildew; division of statistics, report No. 83 (new series), April, report on the condition of winter grain, the condition of farm animals, and on the freight rates of transportation.

A PRESENT FOR BUTTER MAKERS.

We have received an account book printed especially for dairymen, with columns for amount of milk, pounds of butter churned, to whom sold, etc., for each day in the year. It also contains valuable breeders' tables, rules for making gilt-edged butter, and other interesting matter. Wells, Richardson & Co., Burlington, Vt., have kindly offered to mail a copy free to any of our readers who sends a stamp for postage.

In connection with this we would say that Wells, Richardson & Co.'s Improved Butter Color is thoroughly reliable and one that we can recommend to all dairymen. From a letter recently written by Mrs. H. P. Dunham, Lenexa, Kansas, we quote: "Several of my neighbors said they would not use anything to color their butter, but when they had to sell for several cents a pound less than I was getting, they changed their minds and now are using what I do, Wells, Richardson & Co.'s Improved Butter Color."

We should like to give a new chimney for every one that breaks in use.

We sell to the wholesale dealer; he to the retail dealer; and he to you.

It is a little awkward to guarantee our chimneys at three removes from you.

We'll give you this hint. Not one in a hundred breaks from heat; there is almost no risk in guaranteeing them. Talk with your dealer about it. It would be a good advertisement for him.

'Pearl top' and 'pearl glass,' our trade-marks—tough glass

Pittsburg. GEO. A. MACBETH & CO.

$3000 A YEAR! I undertake to briefly teach any fairly intelligent person of either sex, who can read and write, and who, after instruction, will work industriously, how to earn Three Thousand Dollars a Year in their own localities, wherever they live. I will also furnish the situation or employment, at which you can earn that amount. No money for me unless successful as above. Easily and quickly learned. I desire but one worker from each district or county. I have already taught and provided with employment a large number, who are making over $3000 a year each. It's NEW and SOLID. Full particulars FREE. Address at once, E. C. ALLEN, Box 420, Augusta, Maine.

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Combines Three Complete Brass Machines.
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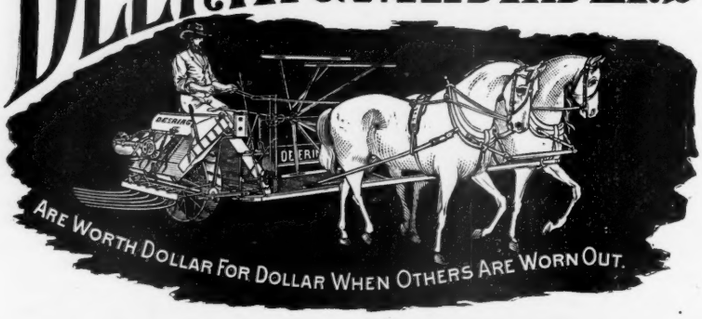
SEND FOR SPECIAL CIRCULAR

DEERING JUNIOR STEEL BINDERS



NEW GIANT JUNIOR GIANT DEERING MOWERS SAVE GRASS THAT OTHERS LEAVE.

FLOWER BRANDS DEERING BINDER TWINES SUIT EVERY PURSE AND EVERY TASTE

For Sale Everywhere. For Copy of "Whys and Wherefores" by Therefore Do So, Esq. write to WM. DEERING & CO. CHICAGO. U. S. A.

Commercial Floriculture.

The extent of the business of growing flowers and flowering plants for sale is a revelation. For the first time it has been made a subject of census investigation. J. H. Hale, of Connecticut, was the special agent in charge of this work, under the direction of Mr. Mortimer Whitehead, of the agricultural division of the census. Mr. Hale obtained his information direct from the florists upon schedules especially prepared for the purpose and by personal visits to their establishments in all parts of the country. While not so extensive a work as the investigation on truck farming (see the summary in the AMERICAN AGRICULTURIST for April), the same practical thoroughness characterizes the bulletin on floriculture.

While floriculture has been carried on as a business in this country for upward of 100 years, it is only within the past 25 years that it has assumed large proportions. Nearly 30 per cent of the floricultural establishments now in existence were started between 1880 and 1890, and it is estimated that upward of 400 such concerns were established in 1890. It will be seen from the summary below that these establishments, including fixtures, heating apparatus, tools and implements, represented a value in round numbers of forty millions of dollars, employing some 17,000 men and 2000 women at an expense of eight and one-half millions of dollars annually, while the sales of plants exceeded twelve million dollars, and cut flowers brought an additional income of over fourteen millions.

Floral establishments were found in every State and territory except Idaho, Nevada, Indian Territory and Oklahoma. The greatest area of glass in any one establishment was 150,000 square feet, and the smallest sixty square feet,—the latter a cozy attachment to the sitting-room of a New England farmhouse, from which the lady of the house sells annually from $25 to $50 worth of plants and flowers. In case of small greenhouses of from 300 to 1500 feet of glass, the owner or some member of his family does the work, often in connection with market gardening or a small nursery trade. Some of these small establishments are conducted by women, there being over 300 of such in the country. In the large concerns extra men are employed for shorter or longer periods. The average wages, as stated below, represents all labor, skilled and unskilled, on the basis of 300 working days in the year, but the foremen or experts receive from fifteen to twenty dollars per week. The catalogues issued were over twenty million in number, and nearly four million dollars were paid for postage, advertising, freight and express. One firm alone reports sales of one million plants in 1889, grown mostly in two and one-half inch pots and sent by mail. Many of the florists also do a considerable business in the arrangement and planting of both public and private grounds, especially when located near summer resorts, but the census takes no account of this feature of the business.

Of the plants sold the demand in the Northern and Eastern States is greatest for geraniums, coleus, roses, pansies, verbenas, heliotrope, carnations, chrysanthemums, palms, ferns and fuchsias, nearly in the order named. In the South the demand is for roses, chrysanthemums, geraniums, coleus, palms and ferns, while California shows the demand to be largest for roses, carnations, chrysanthemums, geraniums, palms and pansies. There is also a very general and growing demand for aquatic plants, and specialists are giving marked attention to this branch of the business. Regarding cut flower sales, reports show that, while there is a slight variation in the demands of the different markets, the greatest demand everywhere is for roses, followed closely by carnations. These two furnish about 65 per cent in value of all cut flowers sold. Violets, chrysanthemums, lilies, hyacinths, smilax, bouvardia, heliotrope, pansies and tulips, in the order named, supply 25 per cent more, while the other 10 per cent is made of orchids, tuberoses, mignonette, primroses, camellias, daffodils, and many others cultivated in a small way to supply a special or local demand. In the final report it will be the endeavor to give a detailed statement regarding each class of production, insect enemies, remedies, etc. As to the profits in the business from the different classes of plants, 80 per cent of the reports mention roses as most profitable, carnations second, and violets third, while 20 per cent rank carnations first, roses second, and violets third.

From the figures given and statements made by florists all over the country, the industry is pronounced to be in a healthy and prosperous condition, giving employment to thousands of persons and fair reward for labor and capital. It is also doing much toward the adornment of the homes and the elevation of the tastes of people of all classes. For with the growth of the business prices are lower, and the masses are able to buy either plants or cut flowers. The increased cul-

(*Continued on Page* 366.)

The Cure For

Scrofula was once supposed to be the touch of royalty. To-day, many grateful people know that the "sovereign remedy" is Ayer's Sarsaparilla. This powerful alterative extirpates "the evil" by thoroughly eliminating all the strumous poison from the blood. Consumption, catarrh, and various other physical as well as mental maladies, have their origin in

SCROFULA

When hereditary, this disease manifests itself in childhood by glandular swellings, running sores, swollen joints, and general feebleness of body. Administer Ayer's Sarsaparilla on appearance of the first symptoms.

"My little girl was troubled with a painful scrofulous swelling under one of her arms. The physician being unable to effect a cure, I gave her one bottle of

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Sarsaparilla, and the swelling disappeared." —W. F. Kennedy, McFarland's, Va.

"I was cured of scrofula by the use of Ayer's Sarsaparilla."—J. C. Berry, Deerfield, Mo.

"I was troubled with a sore hand for over two years. Being assured the case was scrofula, I took six bottles of Ayer's

Sarsaparilla

and was cured."—H. Hinkins, Riverton, Neb.

Prepared by Dr. J. C. Ayer & Co., Lowell, Mass. Sold by all Druggists. Price $1; six bottles, $5.

Cures others, will cure you

UNLIKE ANY OTHER

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Should Have It in The House.

Dropped on Sugar, Children Love

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In use over 40 YEARS in one family.

Dr. I. S. JOHNSON & Co.—It is sixty years since I first learned of your JOHNSON'S ANODYNE LINIMENT; for *more than forty years* I have used it in my family. I regard it as one of the best and safest family remedies that can be found, used internal or external, in all cases. O. H. INGALLS, Deacon 2nd Baptist Church, Bangor, Me.

Every Sufferer From Rheumatism, Sciatica, Neuralgia, Nervous Headache, Diphtheria, Coughs, Catarrh, Bronchitis, Asthma, Cholera Morbus, Diarrhœa, Lameness, Soreness in Body or Limbs, Stiff Joints or Strains, will find in this old Anodyne relief and speedy cure. Pamphlet free. Sold everywhere. Price 35 cts., by mail, 6 bottles, Express paid, $2. I. S. JOHNSON & CO., BOSTON, MASS.

THE OLD DOCTOR'S SIGNATURE, *A. Johnson* Is on Every Genuine Bottle Label.

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CAUSTIC BALSAM

A SAFE, SPEEDY AND POSITIVE CURE for Curb, Splint, Sweeny, Capped Hock, Strained Tendons, Founder, Wind Puffs, Skin Diseases, Thrush, Diphtheria, Pinkeye, all Lameness from Spavin, Ringbone or other Bony Tumors. Removes all Bunches or Blemishes from **Horses and Cattle.** SUPERSEDES all CAUTERY or FIRING Impossible to Produce Scar or Blemish.

Every bottle sold is warranted to give satisfaction. Price **$1.50** per bottle. Sold by Druggists, or sent by express, **charges paid,** with full directions, for its use. Send for descriptive circulars. Address

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HAIR ON THE FACE, NECK, ARMS

OR ANY PART OF THE PERSON

Quickly Dissolved and Removed with the New Accidentally Discovered Solution

MODENE

and the growth forever destroyed without the SLIGHTEST injury. Harmless as water to the skin. IT CANNOT FAIL. There never was anything like it. **$1.000** reward for failure or the slightest injury. Sent by mail. Price, **$1.00** per bottle. Agents wanted. Full particulars (sealed) sent free. Address,

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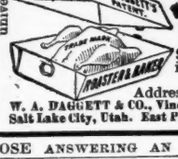

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Needed in every family.

SAVES 20 Per Cent. in *Roasting* and *Bakes the Best Bread* in the world.

Address nearest office for terms.

W. A. DAGGETT & CO., Vineland, N. J. Chicago, Illinois. Salt Lake City, Utah. East Portland, Oreg. Oakland, Cal.

THOSE ANSWERING AN ADVERTISEMENT WILL CONFER A FAVOR UPON THE ADVERTISER AND THE PUBLISHERS BY STATING THAT THEY SAW THE ADVERTISEMENT IN THE AMERICAN AGRICULTURIST.

MATTERS OF BUSINESS.

The Planting of Crops.

The Cotton Report of the United States Department of Agriculture for May relates to the progress of planting. The proportion of the proposed breadth already planted on the first of May was 77.5 per cent, which is less than the average of a series of years. Many correspondents report planting one to two weeks late. It is especially late in North Carolina and Tennessee; fully one-third of the area yet to be seeded north of the Gulf States. From Georgia west to Texas the State averages vary only two or three per cent. The figures are as follows: Virginia, 40 per cent; North Carolina, 63; South Carolina, 78, Georgia, 80; Florida, 92; Alabama, 80; Mississippi, 77; Louisiana, 78; Texas, 79; Arkansas, 76; Tennessee, 71. The delay is due in all sections of the cotton belt to excessive rainfall in February and March, which made early plowing impracticable, and to a very general deficiency in April, rendering the soil dry and cloddy, and hindering germination. The seed bed, as a rule, has been imperfectly prepared, and is in relatively poor condition. Reporters intimate, as a result of the unfavorable spring, that a reduction of acreage may be expected. This may depend somewhat on the opportunity for completing the area during this month, and the prospective profits of a large breadth of cotton.

Winter Grain.—The condition of winter grain on the first of May is reported by the statistician of the Department of Agriculture as 97.9 per cent for wheat; rye, 97.2; barley, 96.2. This is an advance in wheat of one point during April, and of quite as much in rye. A gain in wheat is reported in New York, in some of the Southern States, in Michigan, and slight improvement in Illinois, Missouri and some other States. The uniformity of condition is somewhat remarkable, no State average being lower than 93

The Hay Crop.—The condition of mowing lands is also high, averaging 97, and ranging from 90 to 100. The average for spring pasture is 98, ranging from 92 to 100, except a drop in Utah to 89, and in New Mexico to 83. The eastern slope of the Rocky Mountains comes within four or five points of full condition, and the Pacific coast is near the maximum

Spring Work.—The progress of spring plowing has been greatly retarded by excess of moisture in the Central and Southern belts. The proportion planted is reported at 68.8 per cent. The average of several previous years has been 77 per cent. The Eastern States report favorable conditions for spring work, and fair progress to date. In all the Southern States it has been delayed by heavy rains, and later by drought which has rendered plowing difficult and imperfect. In the Ohio valley excess of moisture delayed plowing through March, and interfered with its progress in some places during the first two weeks of April. The work has progressed rapidly since, and germination has generally been prompt. In the Northwest the season has been favorable, spring work is well advanced, and spring grain coming up and growing finely.

Crop Statistics.—Several States have adopted the plan of collecting statistics of area and yield of crops by means of the assessors while on their annual rounds for valuing property for purposes of taxation. The accuracy of such data has been much questioned, though it is certainly far better than no attempt at actual enumeration. A comparison of this method with census work is instructive. Thus the United States census reported 17,251 acres of tobacco grown in Wisconsin in 1889, yielding 19,386,149 pounds. The assessors' returns for the 1889 crop aggregated 16,121 acres and 15,522,411 pounds. The census figures are thus larger by 1,130 acres and 3,863,738 pounds than the assessors' returns. Here is a discrepancy of seven per cent in area and twenty-five per cent in yield. Which is the more correct method? The census enumerators collected their information, both as to acreage and yield, in June, 1890. The assessors' figures as the acreage of 1889 were collected in May and June of 1889, before the crop was all planted. The enumerators' work, being done a year later, must have included the area as actually planted in 1889, and we accept it as the more accurate. But the discrepancy in total yield of nearly four million pounds, or twenty-five per cent, is startling, especially when the returns of yield were taken by both enumerators and assessors at about the same time—June, 1890. The census must be much the more accurate, for farmers will be more careful in stating yields to enumerators than to assessors. The reports to the latter officials are almost invariably understatements of yield, through fear of increased taxation if the full productiveness were reported.

Market Notes.

A Salary with expenses paid will come handy to any one who is now out of employment; especially where no previous experience is required to get the position. If you want a position, see advertisement on Page 361, "A Chance to Make Money."

American Trotting Horse Register. — The time-honored Wallace's Trotting Register was recently bought by the American Trotting Horse Register Company, which is composed of the most prominent breeders of trotting horses in all parts of the country. The selling price was $130,000, and the publication will be merged in the American Trotting Horse Register.

Dorset Sheep Breeders. — We are pleased to note that the Dorset breed of sheep is rapidly gaining in favor, as a result of which the American Dorset-Horn Breeders' Association was recently organized at Pittsburgh, Pa., with forty-one members. T. S. Cooper, Cooperstown, Pa., was elected president, and M. A. Cooper, Washington, Pa., secretary and treasurer.

Superior Butter.—"The Old Brick" dairy, Roslyn, L. I., the property of S. P. Taber Willets, was established for the purpose of supplying a superior article of butter and to make better known the remarkable merits of the Guernsey breed, which is used exclusively. Mr. Willet's cows are thoroughbreds, and he is having great success and receiving high praise for the superior quality of his butter.

The Hoover Potato Digger is regarded as one of the best in the market. It digs any depth while in motion, and every row can be dug without alternation, and the potatoes are separated from the vines and other refuse at one operation. Gardeners will find this digger a valuable acquisition, as early potatoes can be dug without perceptibly marring the skin. Hoover & Prout, Avery, O., will send catalogue on request.

Famous Holstein Cattle.—The Hon. I. C. Wade, Jamestown, N. D., widely known as one of the most prominent stock breeders of the Northwest, has decided to sell his famous Dakota valley herd of selected Holstein cattle, together with a part of his farm, if so desired. Every animal of this herd is first-class in every respect, pure-bred, and will be sold at a lower price than stock of equal quality has ever been offered. A neat little catalogue, which is sent free to applicants, gives pedigrees and full particulars.

To Cane and Fruit Growers. — Two advertisements of the Blymyer Iron Works Co., of Cincinnati, O., appear in this issue. Their Victor and Niles mills and Cook evaporators for sugar cane and sorghum have for many years been looked upon as standard machinery, in all sections of the world where cane is grown. The "Zimmerman" evaporators for fruits and vegetables have the same world-wide reputation. Parties in want of cane or fruit machinery will do well to send for catalogue and prices.

Reliable Farm Machinery —We invite the attention of persons in want of farm machinery to the advertisement in this paper of the old and reliable Empire Agricultural Works, over thirty years under the ownership and management of the present proprietor, Minard Harder, Cobleskill, N. Y. As it is, and always has been, the aim of Mr. Harder to send out no machine or implement except such as possess the highest standard of excellence and merit, as is evidenced by the high reputation his fearless horse powers, threshers and other machines have attained, our advice is, consult him before purchasing.

The Wheat Outlook.—This crop is in a very strong position. *Bradstreet's* estimates of the total visible and invisible supply of wheat in the United States and Canada (aside from wheat in Canadian farmers' hands) showed a total supply May 1 of only 77,000,000 bushels. If the data are correct as to the amount required for spring seeding and daily consumption established by the Department of Agriculture, and if the export movement is no larger during May and June than for the previous two months the stock of wheat July 1 will be only between eleven and twelve million bushels. This is probably the smallest stock on hand at the beginning of a new crop year that we have had for many seasons. It certainly means higher prices.

The Halliday Standard Windmill has a sectional wheel and is governed mainly by centrifugal force. When built larger than thirty feet the governor is identical to that used on steam engines. It may be adjusted so as to give the wheel any number of revolutions desired by changing the size of regulating weights. This excellent mill can be used for a variety of other purposes as well as pumping water. It is manufactured by the United States Engine & Pump Co., of Batavia, Ill., one of the oldest and most reliable concerns in the United States. They also manufacture a full line of U. S. solid wheel windmills, standard hay tools, I X L corn shellers, saw tables, I X L iron feed mill, horse powers, jacks, pumps, tanks, etc.

The American Association of Nurserymen will hold its 16th annual meeting at West hotel, Minneapolis, June 3 to 13. One and one-third fare on all the principal railroads has been secured, and an attractive programme has been prepared of special interest to every nurseryman and horticulturist. Full particulars can be obtained from the secretary, Charles A. Green, Rochester, N. Y. President S. M. Emery, of Minnesota, proposes to give the fraternity a glimpse of the hustling Northwest, and has planned "a delightful journey to the great Northwestern summer resorts, the lakes, the prairies and the fairy-like cities of Minnesota." The Minnesota State Horticultural Society will hold its meeting in conjunction with that of the nurserymen.

Good for Influenza.—According to an old saying, "The proof of the pudding is the eating of it." Likewise the proof of a medicine is its success in curing those ailments for which it was intended. This test has often been made in the case of Scott's Emulsion, which has proved its great value for the cure of diseases of the respiratory organs. Its efficacy in such affections was demonstrated last year when "la grippe" was so prevalent throughout the world. In numberless cases in which it was used it lessened the severity of the disease. In addition to its use in cases of influenza, it is used for severe colds of whatever description. It is therefore valuable for teachers, who are subject to the varieties of the heated school room and the cold drafts of winter, to have on hand; the household should also be provided with it, as it will save much suffering and many doctor's bills.

That Potato Challenge. — W. J. Sturgis, the Wyoming farmer who won the first prize in the AMERICAN AGRICULTURIST contest last year for a crop of 58,000 pounds on one acre, was challenged by R. C. Nisbet, of Colorado, to another contest this year, AMERICAN AGRICULTURIST rules to govern, except that each contestant should witness the other's harvesting. Although this challenge was issued early in February, no notice was taken of it until April, when Mr. Sturgis challenged Mr. Nesbit to raise a better acre of potatoes than he did. Mr. Nesbit writes to the Denver *News* of April 27 regarding the matter. Mr. Nesbit thinks the AMERICAN AGRICULTURIST was imposed upon by Mr. Sturgis, although the latter's report reached us by November 5, was duly sworn to, and complied with the rules. If Mr. Sturgis has imposed upon us, it is only by himself and his three witnesses committing perjury,—a charge we shall be loath to believe until it is proved.

Truck Farming at Mobile.—In his census bulletin on truck farming, superintendent Porter takes Mobile as an example of what may be accomplished in this direction at the South, and gives the figures of the shipment of vegetables from that city during the years 1890, 1889, and 1888. For shipments from Mobile county 33.3 per cent should be added not included in the foregoing, making a grand total for the three years of $1,629,964 for this small section. The details follow:

Articles.	1890.	1889.	1888.
Cabbage, crates	58,309	63,950	46,592
Potatoes, barrels	78,942	46,508	66,287
Beans, boxes	46,178	24,949	33,489
Peas, boxes	1,278	8,923	5,928
Cucumbers, barrels	.....	.....	132
Tomatoes, boxes	2,695	7,590	7,578
Watermelons	14,881	3,895	4,470
Various packages	780	1,409	224
Value, total	$458,065	$371,113	$393,295

Second City of the World.—The census of 1890 proves that within a radius of fifteen miles from the center of the city of New York there is a population considerably in excess of 3,000,000 people, or more than two-thirds that of the city of London. In the official language of the report, "next to London, New York and its suburbs form the largest city of the globe." Says Mr. Porter: "The people within this fifteen-mile radius are, in effect, citizens of New York, so far as their business and social interests go, although politically they live in different cities, counties and States." These figures are conclusive; there can no longer be a doubt that New York is, and must ever remain, the financial and commercial metropolis of the western world. What an evidence of the wisdom of the founders of "The Great Republic!" What a monument to the energy and integrity of its sons! In the geographical, as well as the practical business center of this, the second city of the world, stands the Grand Central station of the New York Central & Hudson River railroad, from which eleven great through passenger trains depart every day for the North and West; this, in addition to the nearly three hundred other trains that daily leave this great station, giving a service to the patrons of "America's Greatest Railroad" that is not surpassed on either side of the Atlantic.

$45.25 BUGGIES

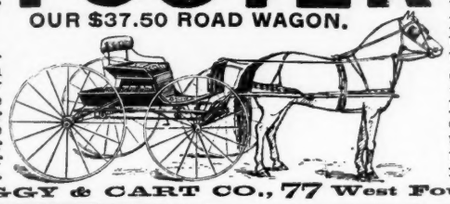
ARE NOT IN ANY POOL or TRUST COMBINATION.

We sell direct to the consumer at factory prices, and by dealing direct with us you save dealer's profit. It is a duty you owe to yourself to get the most value for your money; then why pay a dealer $25.00 more than we ask for the same quality of goods? We don't want your trade until you are satisfied that our goods are exactly as we represent them.

Address **THE FOSTER BUGGY & CART CO., 77 West Fourth St., Cincinnati, Ohio.**

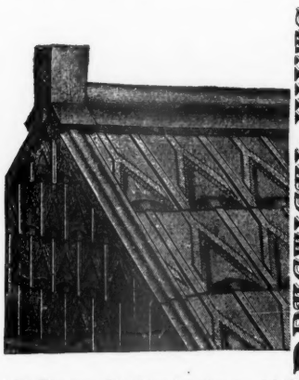
FOSTER

OUR $37.50 ROAD WAGON.



$5.25 HARNESS

We give a guarantee with all Foster Buggies and Harness sold. Our reputation for good work at low prices is known throughout the country, therefore we can not afford to make any claims that we can not support. Our experience has been "A customer once secured is a customer forever." Write for our illustrated catalogue and join us in our efforts to kill off the pool and trust which is sucking the life-blood from the consumer.



PRACTICAL HINTS TO BUILDERS. FREE

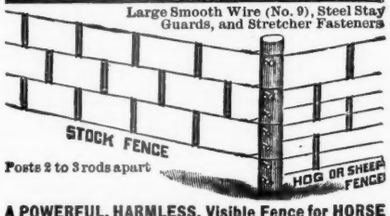
100 Pages. 40 Illustrations. 20 Short Chapters.

Over 100,000 copies of this little book have been sold at ten cents each. We now propose to put it in the hands of persons contemplating building. Send your address and we will mail you a copy free, together with our lithographic advertisement, which, in colors, represents the various styles of Metal Shingles and Roofing Sundries we manufacture.

The National Sheet Metal Roofing Co.,
No. 9 Cliff St., New York City.

THE DUNCAN FENCE.

Large Smooth Wire (No. 9), Steel Stay Guards, and Stretcher Fasteners



A POWERFUL, HARMLESS, Visible Fence for HORSE PASTURES, FARMS, RANGES AND RAILROADS.
You can build any height, and, by using Hog or Sheep Guards, as close as you wish.
WIRE FENCE IMPROVEMENT CO.
87 TO 91 THIRD AVE. CHICAGO.

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If so, and you wish to obtain the leading papers of the day, when purchasing, ask your stationer for, and insist on having
BOSTON LINEN *(for society correspondence).*
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These papers have gained an unprecedented reputation in every State and Territory on account of their excellent quality and reasonable price. If your stationer does not keep them, and will not get them for you, do not accept any others, but send us your name, mentioning "American Agriculturist," and we will forward you our complete set of

SAMPLES FREE!

We send full information as to price, styles, size, etc., also samples and price of stamping your initial, monogram, crest, coat-of-arms, street address, etc., upon the paper.

SAMUEL WARD COMPANY,
49 & 51 Franklin St. Boston, Mass.

HEEBNER'S Patent LEVEL-TREAD HORSE-POWER.

With SPEED REGULATOR.
For 1, 2 and 3 Horses.

Catalogues Free.

LITTLE GIANT Threshing Machine.
Threshes Grain, Rice, Flax, Millet and Grass Seed. Fully Warranted. Feed and Ensilage Cutters, Feed Grinders, &c
HEEBNER & SONS, Lansdale, Pa., U. S. A.

The Improved RELIABLE PUMP.

All working parts now made of brass. There should be one in every house for use in case of Fire. No farmer or gardener should be without one for spraying trees, washing windows, washing buggies, etc. Fruit Growers can save their fruit, such as Cherries, Apples, Peaches, Plums, Currants, or fruit of any kind, where Insect will destroy it. Each Pump has two nozzles, one for solid stream and the other for spraying. This Pump is the best for the money in the market, is double acting, will throw a stream 50 to 60 feet horizontally, or 25 to 30 feet high, and is the cheapest pump on the market. Price only $3.50 each. **THE GEO. WORTHINGTON CO., 95 and 97 St. Clair St., Cleveland, Ohio.**

MONEY

can be earned at our NEW line of work, rapidly and honorably, by those of either sex, young or old, and in their own localities, wherever they live. Any one can do the work. Easy to learn. We furnish everything. We start you. No risk. You can devote your spare moments, or all your time to the work. This is an entirely new lead, and brings wonderful success to every worker. Beginners are earning from $25 to $50 per week and upwards, and more after a little experience. We can furnish you the employment and teach you FREE. No space to explain here. Full information FREE. **TRUE & CO.,** AUGUSTA, MAINE.

STOCK SCALES

4 TON $45.

U. S. STANDARD. FULLY WARRANTED.

☞ Delivered at your R. R. Station and ample time for building and testing allowed before acceptance.

***OSGOOD & THOMPSON,* Binghamton, N. Y.**

IDEAL JUNIOR WIND MILL

"Money makes the mare go," and a little breeze operates the **Ideal Junior**—a little money buys it. Ask for catalogue free.

STOVER MFG. CO.,
510 River Street, FREEPORT, ILL

CANE MILLS.

More kinds and sizes of Mills and Evaporators, for Sorghum and Sugar Cane, are made by **The Blymyer Iron Works Co.,** of Cincinnati, O., than by any other works in the world. They are the *sole makers* of the *Victor, Great Western* and *Niles Mills,* the *Genuine Cook Evaporator,* and the *Automatic Cook Evaporator.* Send for Catalogue, Prices, and The Sorghum Hand Book.

BEES AND HONEY

The Dovetailed **Strongest, Best** and **Cheapest BEE-HIVE** for all purposes. Pleases everybody. Send your address to the **Largest Bee-Hive Factory in the World** for sample copy of **Gleanings in Bee Culture** (a $1 illustrated semi-monthly), and a 44 p. illustrated catalogue of **Bee-Keepers' Supplies.** Our **A B C of Bee Culture** is a cyclopedia of 400 pp., 6x10, and 300 cuts. Price in cloth, $1.25. ☞ *Mention this paper.* **A. I. ROOT, Medina, O.**

THE TOWNSEND WIRE STRETCHER. The person stretching the wire can nail it to post from which he is stretching without assistance. It stretches to the last post as well as any other. Warranted not to slip. Price $1.00. Satisfaction guar. or money ref'd. Circ. free. Ag'ts W'ted. Weston Eng. Co. Painted Post, N. Y.

KENNEDY, SPAULDING & CO., Syracuse, N. Y.

MICHIGAN FARMS

Rich Soil, Big Crops, and a near market enables farmers to make **Large Profits.**

Long time, low rates and small payments.
O. M. Barnes, Land Commissioner,
—LANSING, MICHIGAN.—

Outfits for Summer!

Our stock includes many specialties in Garments and Materials for use under the varying conditions of

Out-Door Life.

Riding Habits, Tennis and Yachting Gowns, Madras, Flannel and Silk Neglige Shirts, Tourist Shawls, Bathing Suits, etc., for men, women, and children.

James McCreery & Co.,

Broadway and 11th Street,

New York.

FOR YOU

MR. PARMELEE sold in three days, 116 Copper Coins for $6.915; 29 Silver Coins for $4.713; 4 Gold Coins for $1760. And we can prove that others have done nearly as well

Coin Collecting Pays Big.

If you have any Old Coins or Proofs coined before 1878, save them, as they may be worth a fortune. Illustrated circulars on rare coins free at office or mailed for two stamps.

Numismatic Bank, Boston, Mass.

ESTABLISHED JAN. 1st, 1866. PATENT WATER PROOFED

CHEAP & STRONG WATER PROOF, Applied by our new Patent method with ⅓ the labor of any other way. Unlike any other roof. **No rust or rattle.** An **Economical** and **DURABLE SUBSTITUTE** for **PLASTER** on walls. **Ornamental CARPETS** and **RUGS** of same material, **cheaper** and **better** than Oil Cloths. ☞ Catalogue and **Samples Free.**

W. H. FAY & CO. CAMDEN, N. J.

USE BOILING WATER OR MILK.

EPPS'S

GRATEFUL---COMFORTING.

COCOA

SOLD IN LABELLED 1-2 LB. TINS.

Ask for Ayer's Sarsaparilla, and do not take any other. Sold by all druggists.

Commercial Floriculture.

(*Continued From Page* 363.)

ture of flowers is due to the fact that, aside from the Society of American Florists, there are 965 State and local floral societies and clubs, to say nothing of more than 350 horticultural societies, and the horticultural and agricultural press.

Further details of the industry are condensed below: The States in the Northern Atlantic division are Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey and Pennsylvania; South Atlantic division, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia and Florida; North Central division, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska and Kansas; South Central, Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Texas, Arkansas; Western, Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Washington, Oregon and California:

EXTENT OF THE FLOWER BUSINESS IN DIFFERENT SECTIONS.

	North Atlantic.	*South Atlantic.*	*North Central.*	*South Central.*	*Western States.*	*Total for U. S.*
No. of establishments	2,448	293	1,466	212	240	4,659
No. managed by women	110	31	115	21	35	312
Square feet of glass	21,566,540	2,219,134	11,405,032	2,464,213	1,168,328	38,823,247
Largest No. square feet of glass for one establishment	100,000	150,000	100,000	120,000	45,000	.....
Smallest No. square feet of glass for one establishment	60	150	60	78	100	.....
Acres of land cultivated	5,485	903	4,159	948	666	12,161
Value of implements used	$881,647	$78,499	$524,710	$60,615	$42,223	$1,587,694
Total value of establishments (*a*)	23,195,052	1,907,572	10,363,357	1,887,582	1,002,160	38,355,722
Established between 1800 and 1850	62	9	8	3	.....	82
Established between 1850 to 1870	244	25	105	24	11	409
Established between 1870 to 1880	596	58	257	52	35	998
Established between 1880 to 1890 (*b*)	902	97	639	80	79	.....
Men employed	8,549	1,036	4,892	844	1,526	16,847
Wages paid men per day	$1.38@1.67	$0.93@1.70	$1.001@.65	$0.78@1.64	$1.37@2.63	$0.78@2.63
Total wages paid men	4,549,914	366,414	1,984,392	321,288	732,819	$7,954,827
Women employed	707	123	737	221	170	1,958
Wages paid women per day	$0.75@1.25	$0.42@1.50	$0.50@1.10	$0.50@1.05	$0.87@1.50	$0.42@1.50
Total wages paid women	190,461	26,123	195,189	51,147	65,910	528,830
No. of horses employed	2,271	289	1,630	272	173	4,635
Cost of fuel used	$716,453	89,711	302,059	34,322	17,607	1,160,153
Wholesale catalogues issued (No.)	2,147,400	41,000	1,153,000	65,200	119,000	3,425,600
Retail catalogues issued	10,992,494	335,300	5,360,050	581,250	361,000	17,630,094
Paid for postage	$478,270	$12,103	$244,553	$23,855	$8,657	$767,438
Paid for advertising	$633,978	$20,273	$457,978	$33,285	$15,654	$1,161,168
Paid for freight	$302,724	$11,454	$177,569	$21,215	$21,260	$534,222
Paid for express	$284,197	$21,645	$188,832	$43,315	$16,402	$551,391
Estimated freight and express bills on outgoing shipments	$487,682	$38,850	$469,656	$48,646	$42,070	$1,086,905
Roses propagated (No.)	23,030	950,500	20,791,426	3,890,282	393,585	49,056,253
Hardy plants propagated	14,510,083	1,393,762	16,063,617	2,699,146	3,714,264	38,380,872
All other plants propagated	81,258,117	8,944,592	48,484,874	10,158,584	3,989,125	152,835,292
Total plant sales	$5,972,212	$602,646	$2,961,672	$766,398	$1,733,553	$12,036,478
Total cut flower sales	$8,323,006	$753,314	$4,106,760	$660,605	$331,644	$14,175,328
Per cent of stock at wholesale						
Per cent sold at retail						

a—Including fixtures and heating apparatus.

b—The dates of establishment are given for seventy-two per cent of the florists in business.

Death of Lawson Valentine.—Lawson Valentine, the president of the Rural Publishing Company, died at his country home in Orange Co., N. Y., on May 5, aged sixty-four years. He was born in Cambridgeport, Mass., and received his early education at the Boston public schools. When little more than a boy he went into business in which, through his energy, enterprise and perseverance, he met with extraordinary success, and became famous as the first manufacturer of high-grade varnishes in the United States. In addition to this Mr. Valentine was interested in various other enterprises. He was a partner in the publishing firm of Houghton, Mifflin & Co., principal owner of the *Christian Union*, and more recently he became president of the Rural Publishing Company. To our older readers the name of Lawson Valentine as owner and founder of the Houghton Experiment Farm is familiar. With a view to establish in this country an experiment station similar to that of Lawes and Gilbert in England, Mr. Valentine devoted a large amount of labor and money toward this end. At the time it was his intention to make liberal provision for the continuance of this experiment after his death, but, when our National and State governments made ample appropriations for agricultural experimentation, the plan was abandoned. Full accounts of the work at Houghton Farm were given in former volumes of the AMERICAN AGRICULTURIST. Mr. Valentine was a man of firm character and indomitable perseverance and a stanch friend to those who enjoyed his confidence and esteem.

Catalogues Acknowledged.

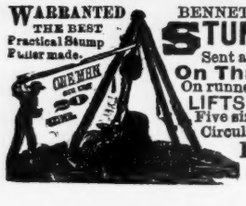
THE BERGER MANUFACTURING CO., Canton, Ohio. Illustrated Catalogue and Price List for 1891, pp. 112. This beautiful catalogue of Berger's patent eave troughs, hangers, corrugated and plain conductor pipes, cornices, window caps, etc., and steel roofing will be greatly appreciated by the trade. A special ceiling catalogue is mailed to any one applying for it.

WHITMAN'S SPECIAL BALING PRESS CATALOGUE: This beautifully printed and comprehensive catalogue will open the eyes of the interested public. It is only within recent years that hay, straw, cotton, and other bulky fibrous products, could be pressed into bales of convenient size and shape for shipment. Since the first baling presses were introduced wonderful improvements have been made in their construction, which have resulted in the manufacture of machines to-day, by the Whitman Agricultural Co., of St. Louis, Mo., which is practically perfect, making a bale of hay per minute and from ten to eleven tons per day. Not only are these presses capable of such rapid work, but the bales are perfectly formed and securely bound. Parties desirous of entering on this enterprise should write for a catalogue to the address given above.

SHEEP--- COTSWOLDS, SOUTHDOWNS, OXFORDDOWNS, SHROPSHIRES and MERINO Sheep and Lambs of superior breeding. We are booking orders now for lambs of the above breeds. We have also a choice lot of yearlings and two year olds to offer. Write at once for prices and particulars.
W. ATLEE BURPEE & CO., 475 N. 5th St., Philadelphia, Pa.

J.I.C. DRIVING BIT The only bit made that can be used on a gentle horse or the most vicious horse with equal and entire success.
50,000 sold in 1889. 75,000 sold in 1890.
THEY ARE KING.
Sample nailed XC for Nickel $1.50. $1.00
Stallion Bits Fifty cents extra.
RACINE MALLEABLE IRON CO. RACINE, WIS. J. P. Davies, Mgr.

JOSEPH GILLOTT'S
STEEL PENS.
GOLD MEDAL, PARIS EXPOSITION, 1889.
THE MOST PERFECT OF PENS.



WARRANTED THE BEST Practical Stump Puller made.
BENNETT'S IMPROVED STUMP PULLER
Sent anywhere in the U. S. On Three Days Trial.
On runners. Worked by 2 men.
LIFTS 20 TO 50 TONS.
Five sizes. Price, $35 to $70.
Circulars free. Man'f'd by H. L. BENNETT, Westerville, O.

The QUEEN WIND MILL
Runs with less wind, and is the neatest appearing wind mill made.

No pay asked until mill is running satisfactorily. If no agent in your place we will sell you a wind mill at agent's prices and save you agent's profits.
Write for catalogue.
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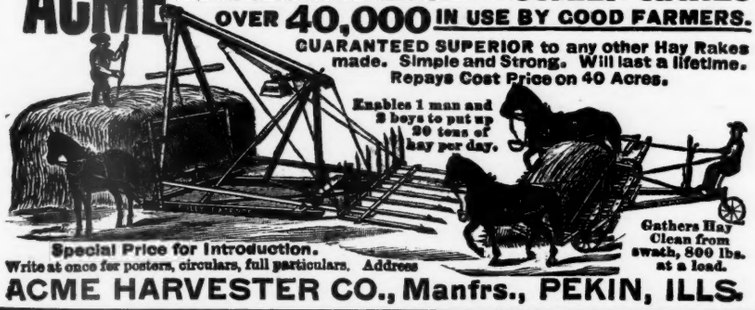

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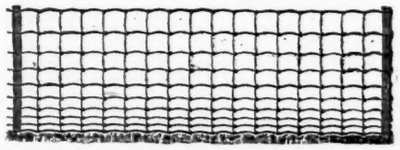

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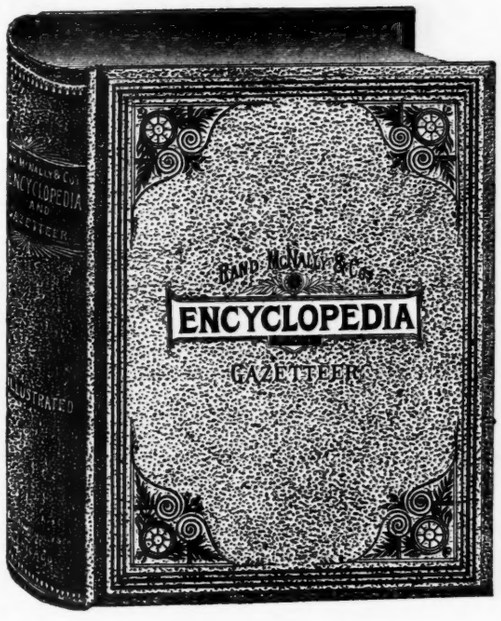

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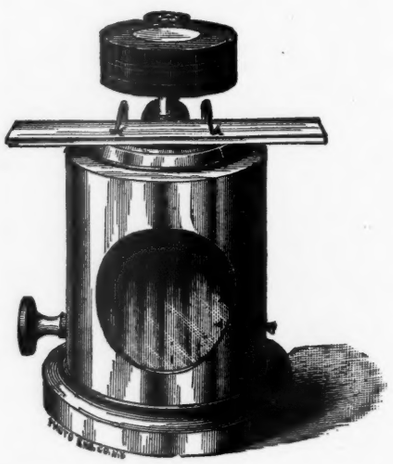

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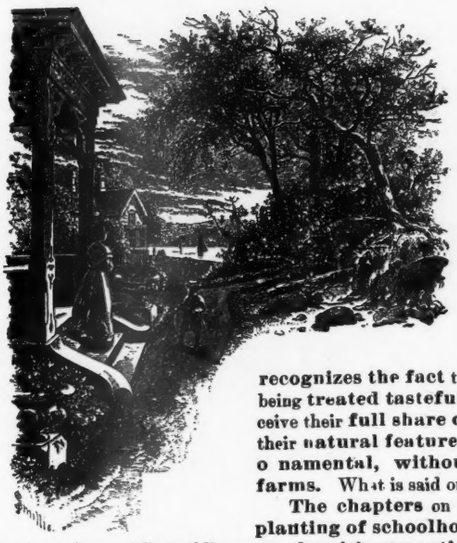

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